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FOREIGN BODIES IN THE AIR AND FOOD PASSAGES

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(Presented before The El Paso County Medical Society, May, 1931.)

This is an important subject because more and more such cases are being recognized. This does not mean that there actually exist more such cases, but the medical man of today is more alert and on the lookout for these cases. In the past, foreign bodies of the bronchi were called pneumonias, lung abscesses and tuberculosis. There is still a tendency along that line. In all unusual or obscure chest conditions a careful history should be combined with an x-ray and thorough physical examination, and, if there still exists any doubt, a bronchoscope should be passed and the bronchial tree inspected.

With foreign bodies in either the air or food passages, initial symptoms are choking, gagging, coughing and wheezing. After that there may be an interval in which there are no symptoms. If the foreign body is lodged in the larynx there may be hoarseness, croupy cough, hemoptysis, dyspnea and cyanosis. Tracheal foreign bodies, according to Jackson, are characterized by an audible slap, palpatory thud and asthmoid wheeze. These signs are caused by the foreign body being flipped up and down the trachea as the patient breathes.

Foreign bodies of the bronchi, after the initial symptoms of cough, choking and wheezing, may have a symptomless interval. Non-obstructive metallic foreign bodies may be free of symptoms for a long time and then cause symptoms of lung abscess or tuberculosis. Vegetal organic foreign bodies, such as beans, peas, watermelon seeds and peanut kernels, rapidly cause severe tracheobronchitis. Obstructive foreign bodies when there is a comp'ete blockage of the invaded lung, cause atelectasis and drowned lung, with a compensatory emphysema of the opposite lung. When the blockage is only partial and there is a valve-like action, allowing air to enter the lung but not to leave, we get an obstructive emphysema of the invaded side. The lung is more transparent, the ribs farther apart, the diaphragm depressed, the heart pushed to the opposite side. According to Jackson, there is a side-to-side movement of the heart with respiration in obstructive emphysema, which is not present in obstructive atelectasis. These x-ray findings are of the greatest value in localizing foreign bodies which do not throw a shadow. X-ray will readily show metallic bodies and others such as teeth, bones, shells and buttons. Glass, because of its lead content, throws a good shadow, as will be seen from one of the cases I will show later. Of physical signs the most important is a diminution of intensity of the breath sounds distal to the foreign body.

The most important symptoms of foreign body in the esophagus are difficult and painful deglutition, a subjective sensation of a foreign body, and an increase in the action of the salivary glands. X-ray and having the patient swallow a barium mixture will locate most obstructions, whether opaque or non-opaque. Many times something is swallowed which traumatizes the tissues in passage and produces a sensation as if something has lodged. In such cases the patient is usually feeling much better in twenty-four hours.

Most objects, even open safety-pins and needles, will pass on through the bowels without harm once they have reached the stomach. Such objects should be watched daily through the fluoroscope and, should they lodge at some point in the intestine for

as long as three days, they should be removed through an abdominal incision, because of the danger of perforation.

No attempt should ever be made to remove a foreign body of the esophagus or bronchus except under direct vision through an esophagoscope or bronchoscope. Jackson states that no other method is worthy of a moment's consideration and that many lives have been needlessly sacrificed by blind instrumentation with the obsolete probang and rubber tubing, and so forth, whereby an effort is made to dislodge the obstructing body into the stomach. Such procedure often cause perforation of the esophagus and mediastinitis, which means death within twelve hours.

A number of cases will now be presented with some interesting phases of each.

CASE REPORTS

Case I. J. S., an American boy, age 5, with five-cent piece in esophagus; duration 24 hours. Removed by bronchoscope, Feb. 11, 1925. This boy's symptoms were a bit suggestive of foreign body of the air passages because of severe cough and dyspnea. Both symptoms were caused by a relatively large foreign body in the esophagus pressing forward on the trachea sufficiently to produce the respiratory distress. (Fig. 1.)

Case II. A. M., American boy, age 8. Tack in right bronchus; duration 6 years. Symptoms of lung abscess and tuberculosis. Tack removed by bronchoscope, July 8, 1925.

This was one of the most interesting cases I have had. The boy had been in poor health since the age of two, and at the age of five was brought from his home in Oklahoma to New Mexico because it was thought that he had tuberculosis. The x-ray picture (Fig. 2) shows the tack in the left bronchus and the left lung is quite cloudy. Two weeks after this picture was made the tack was removed from the right bronchus, having shifted from the left to the right during that interval. The tack, no doubt, had sojourned in the left bronchus during most of the 6 years and had produced the inflammatory changes. This boy has made a complete recovery.

Case III. C. R., Mexican girl, age 11. Mexican five-cent piece in esophagus 3 weeks. Difficulty in swallowing solids but no trouble with liquids. Removed by esophagoscope, July 11, 1925.

This girl was from Juarez and was evidently waiting for a miracle to happen and the coin to be dislodged. The miracle did not happen and she finally came to El Paso and lost her five-cent piece through tthe esophagoscope.

Case IV. E. B. S., 8 months old American girl. Open safety-pin in esophagus; duration 24 hours. Slight pain on taking food. Pin removed by esophagoscope, March 8, 1926. Fortunately this pin was pointed the right way (Fig. 3) which made removal easy. As a rule the point is up and in such cases we have a number of instruments as well as methods whereby they can be removed. Great care must be taken that the points of sharp bodies do not perforate the thin wall of the esophagus.

Case V. A. J., Mexican boy, 1 year old. Piece of apple core in right bronchus; duration 24 hours. Removed by bronchoscope, April 3, 1926. Diagnosis was made by the history and absence of breath sounds over right lung. Breathing was normal after piece of apple was removed and the severe tracheobronchitis set up by the vegetal foreign body cleared up in 3 or 4 days.

Case VI. F. E., one-year-old Mexican girl. Frijole bean in trachea; duration 12 hours. This patient had frequent strangling spells due to the lodging of the bean against the under side of the larynx. The palpatory thud and audible slap were present in this case. Moisture had caused such swelling of the bean that it was necessary to remove it prece by piece, July 2, 1926.

Case VII. J. L., Mexican boy, age 3. Walnut kernel in right bronchus; duration 12 hours. Complete obstruction of right bronchus. Diagnosis made by history and absence of breath sounds over right chest. Kernel removed through bronchoscope. Uneventful recovery. June 30, 1927.

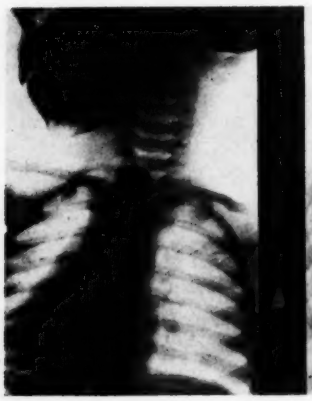

Fig. 1

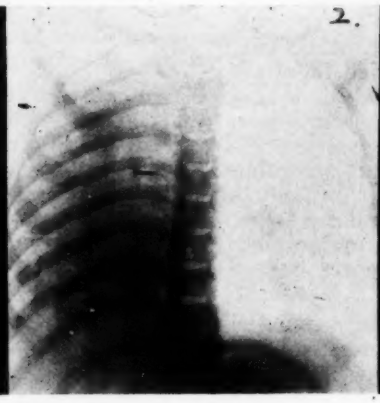

Fig. 2

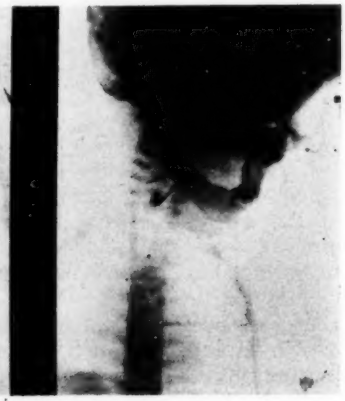

Fig. 3

Fig. 1 Case I. Five-cent piece in esophagus. Coins in the esophagus present the flat surfaces anteriorly and posteriorly, while similar bodies in the larynx present the edges in this plane.

Fig. 2. Case II. Tack in the left bronchus; two weeks after this film was made the tack was removed from the right bronchus, having shifted in the interim.

Fig. 3. Case IV. Open safety pin in the esophagus.

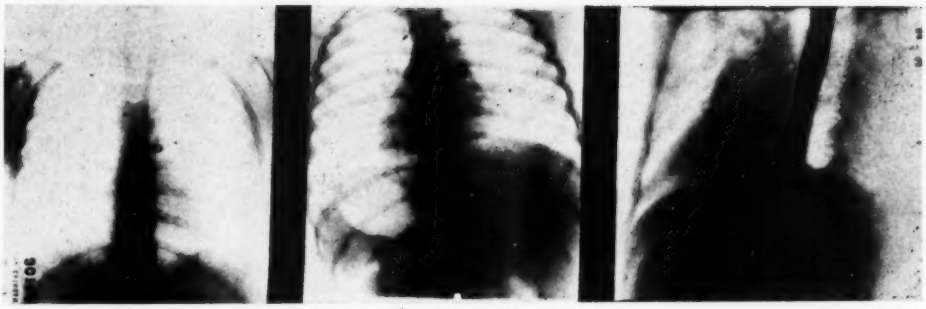

Fig. 4 Fig. 5 Fig. 6

Fig. 4. Case X. Thumb tack in left bronchus.
Fig. 5. Case XIV. Glass bead in right bronchus.
Fig. 6. Case XIX. Obstruction of esophagus by piece of beefsteak.

Case VIII. L. L., Mexican girl, age 15 months. Pinto bean in right bronchus; duration 36 hours. It was necessary to remove this bean piece by piece because of swelling of the bean from the moisture in the bronchus. July 28, 1927.

Case IX. Mrs. H. H., age 40. Piece of beefsteak lodged in upper end of esophagus; duration 6 hours. This woman had had similar experiences on two previous occasions, but had been able to dislodge the piece of meat. Fluoroscope, with the patient taking a little barium by mouth, showed the position of the obstruction. There was a distended aortic arch, which probably was the cause of the stenosis of the esophagus. A piece of steak was removed through the esophagoscope, September 17, 1927.

Case X. F. G., Mexican boy, age 11. Thumb tack in left bronchus; duration 6 hours. No symptoms except slight pain under sternum. Tack removed by bronchoscope. This boy was playing at school, had a thumb tack in his mouth and inhaled it. After the initial coughing spell, he went into the symptomless period and, except for very slight pain in the chest, we probably would not have been led to get an x-ray picture, (Fig. 4) which showed us the tack.

Case XI. M. V., Jr.; Mexican boy, age 5. Penny in esophagus; duration 6 hours. Unable to swallow food. Penny removed by esophagoscope, March 19, 1928. Uneventful recovery.

Case XII. J. M., American boy, age 3. Five-cent piece in esophagus; duration 4 hours. Removed by esophagoscope, May 10, 1928. Some respiratory obstruction due to relative large size of foreign body in esophagus causing pressure anteriorly on trachea.

Case XIII. Mrs. C. G., Mexican woman, 75 years of age. Chicken bone in esophagus; duration 24 hours. Much pain, increase of saliva and inability to swallow foods. This foreign body was a very jagged and sharp-edged piece of breast-bone of chicken. Removed through esophagoscope with uneventful recovery, June 4, 1929.

Case XIV. F. C., American girl, age 3. Glass bead in right bronchus; duration 8 hours. Slight wheezy cough. Bead removed by bronchoscope, July 5, 1929. This case was interesting because it demonstrated how plainly glass, because of its lead content, will show in an x-ray picture (Fig. 5). Of interest also was the fact that the bronchus was not completely blocked by this rather large foreign body, probably because air was able to pass into the lung through the hole in the center of the bead.

Case XV. M. B., American boy, age 3. Five-cent piece in esophagus; duration 24 hours. No difficulty on swallowing liquids. Foreign body removed by esophagoscope, August 15, 1929.

Case XVI. S. R., Mexican girl, 2½ years of age. Watermelon seed in right bronchus; duration 48 hours. Removed by bronchoscope. This case gave the typical history of bronchial foreign body. An x-ray was made which did not localize the body because the seed was opaque to the x-ray. The parents were told to go home and if the child didn't get better to come back. I first saw the child 48 hours after it had aspirated the seed and by that time a severe tracheobronchitis had set up. The foreign body was removed and the child completely recovered after a rather stormy period of a few days.

This case teaches that, with a clear-cut history and symptoms of a foreign body in a bronchus, we should not hesitate to pass a bronchoscope. We can not expect an non-opaque body to show in an x-ray, nor can we necessarily expect a body of that shape to cause either an atelectasis from complete blockage or an obstructive emphysema from a partial blockage. August 19, 1929.

Case XVII. J. M. H., American girl, age 3. Penny in esophagus; duration 24 hours. Removed by esophagoscope. No unusual features.

Case XVIII. G. B. Y., Indian girl, age 1½ years. Grain of corn in trachea; duration 3 days. Severe tracheobronchitis. Foreign body removed through bronchoscope, January 18, 1930. This baby was brought from Shiprock, New Mexico, a distance of 800 miles. All of the signs of tracheal foreign body were present: the audible slap, palpatory thud and asthmoid wheeze. The baby had a rather stormy convalescence but in three days was so completely recovered that she was able to leave the hospital.

Case XIX. H. M., American man, age 35. Piece of beefsteak lodged in lower end of esophagus; duration 24 hours. Removed by esophagoscope, February 16, 1930. This man was eating dinner in Juarez and had probably forgotten how large a bite he had taken and was attempting to swallow. There was a complete blockage, as shown by the x-ray picture (Fig 6) after the patient had filled his esophagus with a barium mixture.

Case XX. Z. B. K., American boy, age 1½ years. Five-cent piece in esophagus; duration 24 hours.

Removed by esophagoscope. There was nothing unusual about this case. It is well to remember that flat objects lodged in the esophagus present the flat sides anteriorly-posteriorly, while if such an object is lodged in the larynx or trachea we expect to find the edge pointing anteriorly-posteriorly and the flat sides from side to side.

Case XXI. A. V., Mexican boy, 17 years of age. American halfdollar lodged in the esophagus. Removed by esophagoscope. This was a rather large foreign body for the esophagus and produced considerable pain. The boy was able to swallow liquids with difficulty.

Case XXII. A. B., American boy, age 2. Bean in right bronchus; duration 48 hours. Symptoms simulating pneumonia. Bean removed piece by piece. Patient died 24 hours later.

This patient was seen by me in consultation two days after aspiration of the bean. The history pointed to a foreign body and x-ray showed an obstruction atelectasis of right lung with heart moved over to that side. Breath sounds were feeble over the right lung. Some of the consultants had thought that the baby had pneumonia. Bronchoscopy was advised but before that could be done the baby dislodged the bean from the bronchus and it lodged in the larynx and came very near producing death before it was dislodged down into the trachea. The bean was quite large, due to swelling from moisture, and had to be removed piece by piece. There was much laryngeal edema and a tracheotomy was done. However, the child died the following day. Autopsy showed a severe laryngotracheobronchitis and hemorrhages throughout the paryenchyma of the lungs, characteristic of strangulation.

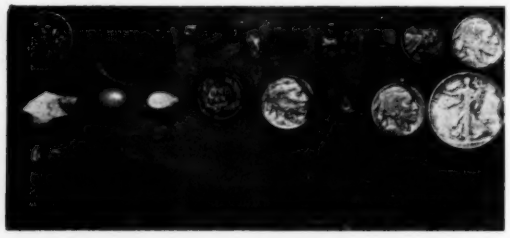

Fig. 7.

Fig. 7. Photographs of foreign bodies removed from cases described in this paper.

The last illustration (Fig. 7) shows a collection of foreign bodies reported in this paper, with the exception of the two pieces of steak and the apple core, which I was unable to preserve.

All of the cases reported made a complete recovery except the last one.

General anesthesia was used in all cases except the last one and it was not necessary then because the patient was unconscious from strangulation.

Local or no anesthetic would probably be preferable where one has three or four assistants making up a well-trained team, but where that is not available I believe a general anesthetic is the best procedure.

BRONCHOSCOPIC DIAGNOSIS AND TREATMENT, INCLUDING FOREIGN BODIES

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(Read before the Fortieth Annual Meeting of the Arizona State Medical Association, held at Nogales, May 7-9, 1931.)

In a mixed audience of specialists, in every branch of Medicine, and general practitioners, I am attempting to give to you in this paper my own experiences and those of others to stimulate more and better peroral endoscopy. The general practitioner and internist would save many satisfied patients for himself and much grief and money for his patient were he to have peroral endoscopic examinations following x-rays on his obscure cases of the respiratory tract and esophagus. Many a life has been lost, or nearly lost, by waiting too long for a laryngeal examination both indirect and direct.

Case 1. Mrs. C., age 24, was admitted to San Diego County General Hospital with extreme dyspnea, seven months pregnant, and laryngoscopic examination showed a large gumma of right arytenoid. A tracheotomy was necessary before laryngoscopic examination could be made. She had a four plus Wassermann. She was placed on antiluetic treatment and, in few days, could breathe through larynx normally when tracheotomy tube was removed. In two months she was readmitted to the hospital and gave birth to an apparently normal baby.

Case 2. Mr. J. B., age 75, with four plus Wassermann, had been given large doses of iodides and was a patient in the County Hospital. One night he began to have laryngeal dyspnea and by the next morning was very cyanotic. A tracheotomy had to be performed before a laryngoscopy could be made, which revealed edema of entire larynx. Iodides were stopped and in a few days the tracheotomy tube was removed.

Case 3. W. D., age 65, admitted in extreme dyspnea. Laryngoscopy was attempted but we had to do a tracheotomy before we were able to do a laryngoscopy which showed an edema of the entire larynx. In a few days this man was free from distress, with all edema gone, and was discharged. His only history was that he was sensitive to fish foods and this time caused edema of the larynx.

Case 4. Mrs. D., age 60, gave history of hoarseness. Her tonsils were removed without a laryngoscopic examination either direct or indirect. I saw her four months later in consultation when at the Mercy Hospital. Did a biopsy by direct laryngoscopy and found a large mass nearly filling the larynx, and the biopsy report was squamous cell carcinoma. Advised laryngectomy but this was refused and she died a few months later of cachexia and suffocation, not even permitting a tracheotomy to be performed.

Case 5. F. S., age 52. Hoarseness for many months; treated for lues; repeated negative blood tests for lues. Admitted to San Diego County General Hospital, December 8, 1928, with only symptom that of hoarseness. A small tumor mass was noticed, on indirect and direct laryngoscopy, on the right vocal cord. Biopsy report was that of chronic inflammation. I continued to observe the tumor

grow and on third biopsy got a report of squamous cell carcinoma and did a laryngectomy, May 1, 1929. Two years later, the man is well, and in all probability will continue well, and is working every day, (Fig. 1).

Fig. 1

Fig. 1. Case 5. Photograph of patient, F. S., two years after laryngectomy for squamous cell carcinoma.

Case 6. J. G., age 2, had definite hoarseness and repeated attacks of difficult respiration and was given antitoxin for diphtheria twice and had tracheotomy twice, before a laryngoscopic examination was made after a third emergency tracheotomy when many papillomas were removed from the larynx. She has now had seven operations for removal of papillomas (Fig 2) and how many there will be in future no one knows. She has had mumps and several colds and is now in good health except for the papillomas.

Fig. 2

Fig. 2. Case 6. Papillomas removed from the larynx of J. G., age 2, at the seven operations.

Case 7. L. W., age 44, was brought to Mercy Hospital in police ambulance at 3 p. m., April 19, 1931, when a tracheotomy was immediately performed by the police surgeon to save his life, on account of extreme dyspnea. On that same morning was feeling well and worked in yard; about 12 o'clock noticed throat getting a little sore. Had his dinner and throat continued to swell, when suddenly seemed to be choked; then, in excitement, called police ambulance. Never history of edema before, occasional sore throat.

Examination: Patient with small tracheotomy tube just inserted by Police Surgeon Brust. Patient very nervous with extreme anxious look on his face, no cyanosis. No obstruction to breathing through tracheotomy tube except small size of tube. Right tonsil, negative; left tonsil, enlarged, red, pus in crypts. Marked pyorrhea. Indirect examination: marked edema of epiglottis blocking view of larynx proper. Direct laryngoscopic examination revealed very edematous epiglottis and arytenoids and aryepiglottic folds. multiple incisions in edematous areas were made with laryngeal knfe and a larger tracheotomy wound made to accommodate larger tracheotomy tube.

In cardiospasm a diagnosis can almost be made by the cone shape of the dilatation of the esophagus when seen with the fluoroscope and x-ray. Yet, all of these cases should have an esophagoscopic examination regardless of how definite the history, for there is always a possibility of an ulcer of the esophagus that could be cauterized and with the esophagus dilated a few times the individual might be restored to health and much saved in time of treatment, misery, and money.

The following three cases are very interesting from this point.

Case 8. Mrs. H., age 40, May 19, 1928. Seven or eight years' difficulty in swallowing, cannot swallow solid foods. Came on gradually, noticed the food regurgitated into mouth. Cannot swallow cold liquids. Bread with cottage cheese comes up in bolus. No history of caustic or acid by mouth. Married for sixteen years and always quarreled, separated six months ago and now can't earn livelihood. No change of symptoms since separation. Esophagoscopy: Very large esophagus from cricopharyngeus to first stenosis or apparent spasm, 33 cm. from incisor teeth, then real spasm at 41 cm., passed bougies for dilatation. May 24, 1928, esophagoscopic bouginage. Stenosis apparently 6 cm. long. May 18, 1928, after ingestion of barium, shows a delay in the passage of the barium at the distal end of the esophagus, where it narrows down to a fine stream just as it enters the stomach. The esophagus was considerably dilated. The location of this delay and the appearance of the barium shadow is strongly suggestive of a long-standing cardiospasm rather than a stricture from organic disease. (J. O. Kellogg.) Repeated dilatations with Sippy bougies on string. Then lost track of patient for three years, during which time she had no treatment. X-ray showed condition about same as formerly and esophagoscopic examination April 7, 1931, showed condition as follows: large esophagus filled with sour, watery solution, which was removed with stomach tube. Large esophagoscope passed spasm without resistance.

Case 9. Mr. W., age 35, had one of the largest dilatations of the esophagus that I have ever seen. He is a truck driver, driving all night every other night, and has been for years. His married life has been an unhappy one and he has worried a great deal. Esophagoscopy showed an enormously dilated esophagus filled with thick foul-smelling liquid; no malignancy present but a spasm of the cardiac end of the esophagus, which is easily dilated. He has now been under observation for one year and is feeling very much better and gaining in weight, following his dilatations.

Case 10. Mr. M., age 21, a university student with a history of difficulty in swallowing for two years. Has had an eczema since infancy and no doubt this allergic disturbance has been a factor in his cardiospasm. His x-ray showed a cone-shaped enlarged esophagus. After two dilatations he showed a marked improvement, then, being a wanderer, went on his way east and was lost sight of. He has had to work his way through high school and university and is of apparently quiet makeup but nearly all these cases have a nervous element to enter into the cause of their condition.

Many a carcinoma and stricture or stenosis is diagnosed cardiospasm, when a true condition would be revealed had there been an early esophagoscopic examination.

In carcinomas of the esophagus it is not only necessary to do a fluoroscopic and x-ray examination, but an esophagoscopy should be performed. Jackson states that the mortality in carcinoma of the esophagus is 100 per cent. If a person gets well after a diagnosis of carcinoma has been made, it is a mistake in diagnosis, for the patient had a cardiospasm, stricture of the esophagus, or other benign obstruction of the esophagus.

The following cases are interesting carcinoma cases.

Case 11. M. M., age 84, first admitted to the San Diego County General Hospital, December 10, 1929. On December 11, esophagoscopy with removal of section for biopsy. Findings: lumen of esophagus blocked with granulation just below cricoid narrowing. Dec. 20, 1929, tissue report was squamous celled epithelioma. (H. A. Thompson.)

Admitted to the San Diego County General Hospital second time, April 2, 1930. April 4, x-ray: delay of barium-soaked bread at level of sixth cervical vertebra, film taken five minutes after ingestion, showed esophagus outlined with barium. April 8, pharyngoscopy; growth is large in hypopharynx and distinctly large across post-pharyngeal wall up to near the level of top of arytenoids. Pyriform fossae filled with fetid solution. April 24, dilatation of carcinoma growth in upper one-third of esophagus and hypopharynx. April 24, barium shows notable obstruction at the level of the thyroid; fluoroscopy shows difficulty in swallowing, a delay in passage of barium-filled gelatine capsules, at a point 2.5 inches below epiglottis. May 13, patient expired. Autopsy: Upper half of esophagus revealed an irregular cauliflower-surfaced growth about 2½ inches in length, producing an almost complete obstruction of the organ. There were a few enlarged lymph glands in the neck. Right lung involved. Left lung consolidated from pneumonia or hypostasis.

Tissue examination from esophagus is basal celled epithelioma. Lung involvement. Lymph gland. Metastatic Carcinoma.

Case 12. J. L., age 65, November 14, 1927, gastrostomy at San Diego County General Hospital. January 27, 1927, thought had cold, loss of voice, only makes sounds. Sore throat started and persisted. First difficulty in swallowing, April, 1927. Increased since progressively. First not able to swallow meats and crusts. Two weeks ago could swallow only liquids. Lost forty pounds since January. December 7, 1927, pharyngoscopic examination, direct method, showed granulation masses on post wall and lateral wall of hypopharynx. Unable to pass esophagoscope through cricoid narrowing, passed No. 8—12 F. bougie three inches into mass but could not pass further. Diagnosis, carcinoma of hypopharynx and esophagus. Death December 9, 1927.

Case 13. Mrs. A. R., age 53, December 13, 1929, referred by Dr. Sundberg, Rees-Stealy Clinic. For three years had trouble with swallowing, and weakness and gradual loss of weight. Was told her condition was nervousness and only three weeks ago was examined by a doctor and was told again her condition was nervousness. Examination: Large cauliflower carcinoma mass in hypopharynx and beginning of esophagus with stricture to point of being unable to pass a bougie larger than No. 9. January 10, 1930, passed large bougie on string. Patient left San Diego latter part of January, 1930. Patient died, July, 1930.

Case 14. R. P., age 72, April 17, 1931. Unable to eat or swallow for twenty-four hours. X-ray: barium at level of clavicle in esophagus. Pain in top of head started six weeks ago when swallowing or coughing. First noticed obstruction to eating ordinary foods one week ago. Has to spit out saliva. Lost three to four pounds in last month. Weight 217 to 220 for thirty years. Examination: About one inch below cricoid, narrowing, almost complete obstruction, of esophagus. Very hard masses, larger mass appearing from right, posterior portion. Unable to pass anything smaller than No. 11 F. bougie on account of firmness of tumor mass. Able to swallow liquids after bouginage.

Case 15. P., age 60, for many months treated for ulcer of stomach by prominent gastro-enterologist. Began to have rapid loss of weight and went to Paradise Valley Sanitarium, where I was called to do an esophagoscopic examination after an obstruction was noticed in fluoroscopic examination.

The esophagoscopic examination shows large amount of foul-smelling dark-brown liquid in pharynx, trickling over into larynx, causing continuous cough. There was a cauliflower mass in upper third of esophagus that biopsy showed carcinoma. A gastrostomy was done and, in twenty-four hours after operation, patient died from a perforation into the trachea. A bronchoscopy was not done.

The following cases of carcinoma of the esophagus are lower down.

Case 16. C. W., age 71, April 1, 1929, choking sensation, vomiting, pain in epigastrium for two months, unable to take solid foods and stimulates emesis. Patient never vomits food, always a mucous, saliva-like fluid. Visited a doctor and was told he had acidosis and was put on orange juice diet. This offered no relief. Soda mint offers considerable immediate relief. Lost twenty-five pounds in past six months. April 9, esophagoscopic examination. Large mass on right side of esophagus, 43 cm. from incisors. April 23, biopsy taken, growth larger. Report squamous cell epithelioma. April 10, dilated esophagus to No. 28 F. Sippy dilators. X-ray of chest: no evidence of metastatic malignancy. April 6, barium delayed two inches above cardia, passed through in fine stream. The upper margin of the constricted area of the esophagus was almost perpendicular to the line of the esophagus giving the characteristic "edge effect," seen in malignant infiltration of the walls. The esophagus above the constriction was not dilated. Examination discloses an annular filling defect of the distal two inches of esophagus, consistent with a malignant involvement. (J. Kellogg.) February, 1931, Dr. Barclay phoned in that Mr. W. was being

examined by him for pension and that his condition was indeed very poor. I was surprised for I thought the man dead months before.

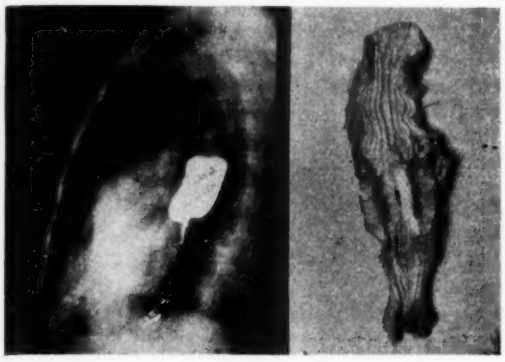

Fig. 3A Fig. 3B

Fig. 3a. Case 17. Lateral roentgenogram of barium defect in esophagus, showing the "edge effect" of malignancy. Film made six hours after barium meal.

Fig. 3b. Autopsy specimen from esophagus of Case 17, showing almost complete obstruction of lumen.

Case 17. E. C., 74, February 9, 1931. Nausea and vomiting. Loss of weight, thirty pounds. Obstinate constipation. Onset of nausea one year ago, becoming worse all the time. Now patient can eat practically nothing but liquids. Bowels will not move without enema every day, no blood in stools. Patient emaciated. Palpable non-painful mass in epigastrium. Masses in both lower quadrants, which seem to be fecal. Esophagoscopic examination February 28, 1931, biopsy, three sections of mass. Growth in esophagus practically closing greater portion of lower third of esophagus. Cauliflower growth with dilatation of esophagus lumen through growth from No. 7 to No. 22.

X-ray: The patient was first seen at the six-hour period at which time there was barium in the esophagus, stomach, and ileum. The barium in esophagus presented a shadow 6 cm. long by 3.5 cm. wide. Its lower border was five inches above the cardia. This border narrowed sharply, giving the characteristic "edge effect" of malignancy (Fig. 3a. A line of barium column extended downward from the above shadow a distance of one inch. At 27-hour period apparent increase in amount of barium in esophagus. Shadow now measures 7 by 3 cm. due to increase in fluids. Conclusion: Findings are consistent with a malignancy of the esophagus extending downward from a point five inches above the cardia. The length of the downward extension has not been determined from the examination but it is at least one inch in length. (Kellogg.)

Autopsy report: February 29, 1931. Fairly well-nourished female, apparently 74 years of age. Very pale. An obstruction half the size of a lemon was found in middle third of esophagus. The growth by direct extension involved the lower right main bronchus. No perforation was found. Cut section of growth (Fig. 3b) showed almost complete obstruction of lumen of esophagus. No metastasis to mediastinal glands.

Case 18. C. P. S., 71 years of age, baker. May 3, 1930, admitted to the San Diego County General Hospital. History: difficulty with swallowing; vomiting, loss of weight (fifty pounds) and strength. About one year ago gradually noticed certain foods would not agree with patient. A drink of real cold water caused nausea. Coarse food, such as apples and cabbages, would not agree with patient. After eating would complain of gas. Vomiting began two weeks before admittance. Bowels normal. May 3, 1930, x-ray. The patient was first seen at the six-hour period, when a barium residue was seen in the upper half of esophagus. Another barium spot about the size of a quarter about midway down the esophagus but about two inches to the right of it, and a small filling in the esophagus just above the cardia. The patient was given a small amount of barium to swallow and there was marked delay in the esophagus at the level of the sixth dorsal vertebra. There was an apparent connection between the linear esophageal shadow and the above spot, indicating that it was probably a diverticulum. A film taken at the twenty-four hour period still shows the diverticulum of the esophagus, described above, to be filled with barium. There is a marked increase in the density of the right hilus, extending fan-shaped into the lower half of the right lung. Suggestive of a metastatic malignant process. (Kellogg.)

May 15, 1930. Esophagoscopy. Ten minutes, time of examination. Large esophagus lumen above carcinomatous ball mass one-half inch across from anterior wall then immediately below from post wall ulcerated mass. Diagnosis: carcinoma of distal third of esophagus.

Patient expired under ether anesthetic when undergoing a gastrostomy. Was a very poor risk. May 27, 1930, tissue from esophagus shows a small piece of acute inflammation tissue. Autopsy, May 21, 1930. Esophagus in its lower third shows annular carcinoma about six inches in length, friable carcinomatous tissue encircling the entire esophagus, marked by dense adhesions to trachea and surrounding tissue. Lungs: marked apical involvement on right side with thickening and adhesions of pleura in both apical regions, some marginal emphysema. Rest of body not abnormal, no metastasis. Tissue examination of esophagus, lung, and so forth. Lung areas of carcinoma, many areas of acute inflammation, marked congestion, alveolar thickening. Esophagus, squamous cell epithelioma. Liver and spleen negative for carcinoma.

Case 19. F. G., 81, April 16, 1930, sent in to San Diego County General Hospital by Dr. Crabtree as a probable carcinoma of lower end of esophagus. Seen in admitting room by Dr. Brown, who requests admission for x-ray study and esophagoscopy. History; Pain in stomach which is worse past three weeks. Food stays heavily on stomach. Can't force much. Appetite good, has been vomiting, off and on, for past three weeks. Chest examination: Moist rales in bases both lungs. Heart sound scarcely heard. Loss of weight thirty pounds. April 19, x-ray report: Esophagoscopic examination after ingestion of barium showed delay at the lower end about two inches above the cardia, with an annular filling defect, the upper margin of which showed a characteristic "edge effect" of malignancy. The annular defect extended over the distal two inches of esophagus. Examination discloses an annular defect of the terminal portion of the esophagus consistent with malignancy. There was marked delay in the passage of the barium. (Kellogg, No. 10,224.)

April 24. Esophagoscopy, fifteen minutes' duration. Findings: Folds and tumor mass at distal end of esophagus. No ulceration. Biopsy and dilatation of esophagus. Laboratory report on biopsy,

hyperplasia of mucous membrane; no evidence of malignancy. April 25, barium passed through the involved area with not as much delay. May 13. Refused further dilatation.

June 5, 1930. Since esophagoscopy patient states that he has felt much relieved, which is evidently due to the dilatation of this area, and he is now taking food much more comfortably, he wishes to leave the hospital and return home. Patient will return in four weeks for further observation. June 7, discharged from hospital. Carcinoma of the esophagus with obstruction, improved. April 26, 1931, returned to the hospital in extreme emaciation.

Case 20. F. N., age 58. X-ray, moderate delay of passage of barium through distal end of esophagus with a constriction simulating a neoplastic defect. Esophagus above was slightly enlarged. October 22, 1930, esophagoscopy. Large tumor mass with some erosion and redness on posterior wall of esophagus at cardiac end of esophagus. Bipsy, and passed No. 13, No. 16, and No. 17 bougies. Tissue report: Adeno-carcinoma. (Dr. H. S. Summerlin.) November 25, 1930, signed release and lost track of patient.

Case 21. F. H., 74 years of age. Difficulty in swallowing. Vomiting food. Symptoms began three months ago and have been increasing gradually but constantly since. Loss of weight, forty pounds in last year. Most of it in past few weeks. June 30, 1930, esophagoscopic examination with removal of section for biopsy. Findings: small ulceration and granulations distal end of esophagus. Time, thirty minutes. Laboratory report: inflammation, not malignant. (H. A. T.) July 2, x-ray; fluoroscopic examination, barium ingestion shows marked delay at the cardia without evidence of filling defect in the esophagus. Findings are similar to those previously reported. (Dr. Kellogg.) July 3, esophagoscopy. Removal of pieces of meat and corn from esophagus. Then dilatation and section for biopsy. Findings: esophagus obstruction, with meat and corn above obstruction. July 3, biopsy. Chronic inflammation, no evidence of malignancy.

Readmitted, August 23, 1930. Diet for two months, milk and water. Vomits incessantly. Marked emaciation. September 8, gastrostomy for alimentation. September 19, patient died. Autopsy findings: Patient old, emaciated. Lungs, hypostatic congestion with infarct in left lung. At junction of esophagus and stomach a mass the size of an egg surrounded the esophagus. Mass was hard and fungating, producing complete obstruction.

NEW GROWTHS IN LUNG

Case 22. C. E. B., 42, November 12, 1929. Complaining of cough, expectoration and inability to get rid of cold six weeks ago. Four years ago, influenza and never well since. Night sweats following flu six weeks ago. Coughs great deal and expectorates yellow material. Gain in weight at present. No pain in chest. X-ray, shows mass at base right lung posterior.

Bronchoscopic examination: Right bronchi are large and all carinae are rounded and red. Large fibromatous mass in third or fourth bifurcation. Biopsy removed and examined. Report: inflammatory tissue. Later report from Mayor clinic on slide showed squamous cell epithelioma, type two.

Chest examination by Dr. Sundberg of Rees-Stealy Clinic, essentially negative, except little dullness in right lower base. Paravertebral bronchus.

Dr. Vinson of Mayo Clinic reports a case of treatment of primary carcinoma of the bronchus by radium and roentgen ray. "From January, 1925, to December 22, 1930, the diagnosis of primary carcinoma of the bronchus was made in seventy-one cases from microscopic examination of tissue which was removed at bronchoscopic examination. Questionnaires were recently sent to this group of seventy-one patients, and the answers show that fifty-three of them are dead. Practically all patients have been advised to have deep roentgen treatment here or at home and many of them have followed this advice. Ten of the patients who have had radiotherapy have shown varying degrees of improvement. Four of these have been observed for periods of from four to seven months, one for eleven months, three for sixteen months, one for three years and one for three and a half years. Six of the patients are failing rapidly and two have not yet replied to the questionnaire."

The above mentioned patient went there for examination in September, 1927. In March of the same year, he had had an attack of pneumonia which was followed by cough, purulent expectoration, fever and loss of 30 pounds in weight.

Roentgenoscopic examination of the thorax revealed marked infiltration in the base of the right lung which was thought to be due to pulmonary abscess.

General examination disclosed absence of breath sounds over this area of infiltration. Bronschoscopic examination disclosed an ulcerative lesion in the right bronchus and a specimen of tissue removed showed it to be a squamous-cell epithelioma, grade 3. He was given deep roentgen-ray treatment, both here and at home and, in addition to this, radium was introduced directly into the bronchus through the bronchoscope. He began to improve immediately and within a year after his return home he had gained 30 pounds in weight, and all of his pulmonary symptoms had disappeared. The last radium treatment was given in October, 1929. His health remained good until May, 1930, when severe marked diarrhea developed, the cause of which has not yet been determined, as he has just returned for examination.

One of the chief reasons why we have advocated bronchoscopy in cases of pulmonary disease, particularly if operation for pulmonary abscess is considered, is to rule out the presence of primary carcinoma of the bronchus before operation is performed. In the past, we have had very little hope that carcinoma of the bronchus would be amenable to any type of treatment, but I feel that the condition of this patient at the pres-

ent time should encourage us to adopt this type of treatment in all cases of bronchial carcinoma.

Case 23. G. S., 10 years old, February 7, 1924, was kicked by a horse just above right knee, three months ago, and since then this area has progressively and gradually enlarged. Examination: Right knee three or four times size of left, unable to fully extend knee. Diagnosis of x-ray report, osteo sarcoma. No evidence of chest metastasis. (L. C. Kinney.)

Fig. 4A Fig. 4B

Fig. 4. Case 23. (a) First roentgenogram showing sharply outlined tumor in lower left thorax. (b) Showing progression in development.

February 8, 1924, was discharged, unimproved, refused operation. Later leg was amputated above knee at Paradise Valley Sanitarium.

November 7, 1929, readmitted. History: almost continuous colds for several years. Drainage from left ear for five years, drains about two or three months each year. Diagnosis: infected tonsils and adenoid, chronic suppurative otitis media, ozena. Continuous raising of heavy muco-pus. Repeated x-ray examinations (Figs. a and b) show a progressive enlargement of a tumor mass in left lower lobe. This has been a subject for considerable guess work with all sorts of probabilities. Bronchoscopy: Pressure on left second bronchus medial side. Dr. Krause, of Tucson, when in San Diego this year, gave a probable diagnosis of dermoid cyst. Dr. Parowski, of Vauclain Tubercular Hospital, gave diagnosis of cyst connected with bronchus and advised and d'd artificial pneumothorax, with no relief. Patient's chest was later opened by Dr. Chas. W. Fox, on the left side, two-stage operation, when there was found a thick, bloody, grumous mass filling the entire lower left lobe area. Examination showed this to be a giant cell sarcoma, chronic inflammation with pigmentation of sarcoma areas. At the present time patient is near death.

Case 24. O. D. June 26, 1928, admitted to the San Diego County Hospital. History: Pain in stomach, loss of weight, and vomiting of blood two nights ago. For several weeks, unable to take solid food. Pain in pit of stomach relieved by food. No history of belching of gas, nor passage of blood in stools.

November 23, 1925, difficulty in swallowing for five years. Present illness, five years ago began to have difficulty in swallowing any solid food. Thinks has no more difficulty now than had four or five years ago. Loss of weight, 150 pounds to 118 pounds in last three years. X-ray, September 11, 1925, with the usual barium mixture there is an irregular constriction in the esophagus beginning 12 cm. from cardia junction and extending irregularly to the cardiac portion of the stomach. There is no usual dilatation above this beginning constriction. The area of constriction is irregular throughout and in middle portion of this area a part of the esophagus shows almost normal diameter. The narrowest point of constriction measures 4 mm. The heavy barium jelly just barely passes through the narrowest point of the constriction. Stomach small in size, no defects. (Dr. Elliott.) Removal of lymph node from neck showed epithelioma.

June 26, 1928, abdomen examination. Pain and tenderness upper left quadrant. No distinct mass felt. X-ray report: barium down to a narrow stream four inches above cardia. Esophagus above this slightly dilated and showed irregular margin along lower portion. Constricted area about 1½ inches long and esophagus dilated again just distal to this, forming two moderately large pouches connected by a constricted portion. There was only a slight delay in the passage of the barium through this constriction. A film taken only 15 minutes after ingestion of barium still showed a small residue. This is not typical of the usual annular malignant infiltration.

August 2, 1928, esophagoscopy, twenty minutes' duration. Large esophagus, 1½ inches in diameter, with inflammation of distal end of esophagus area above mass, this desquamated area covered with thick plastic exudate or membrane. Two large finger-like masses projecting into esophagus. Not ulcerated and difficult to make bleed. Unable to obtain specimen for biopsy as masses squeeze out of forceps. Unable to pass bougies through mass blocking lumen. Immediate postoperative condition, no shock. (C. W. B.)

Autopsy record, esophageal malignancy.

Fig. 5

Fig. 5. Case 25. Lateral roentgenogram showing bronchiectatic cavities filled with lipiodol.

Case 25. K. H., February 27, 1930. Frequent colds. Productive cough with whitish masses, never been blood-streaked. Loss of weight and strength, 185 pounds two years ago to 114 pounds at present. Tires easily, night sweats. Asthmatic attacks for two years. Occasional pleurisy pains. Bronchoscopic examination, February 27, with lipiodol injection. Findings, thickened mucous membrane. Carinae are thick and red, heavy plug of tenacious

mucus in right and left bronchus. Left bronchus lumen is much smaller than right and is shoved backward.

X-ray, February 27, after lipiodol injection, anterior-posterior and lateral positions show a large mass of opaque solution in the medial half of the right base. (Feg. 5.) Shadow measures 2 by 4 cm. (Kellogg.)

March 18, 1930, bronchoscopic examination. Third bifurcation on right side very red, bronchus leading from that portion of lung near midline. Profuse amount of muco-pus.

FOREIGN BODIES REMOVED BY PER ORAL ENDOSCOPY

No. 1—L. S., 80, May 12, 1926. Rabbit bone in cricoid narrowing.

History: Eating rabbit for breakfast this morning and felt a piece of bone in throat. Wearing full set of false teeth and did not notice bone in mouth at time of swallowing. Examination: Indirectly, unable to find evidence of foreign body. Local anesthesia, with pharyngoscope and alligator forceps removed small triangular piece of bone from cricoid narrowing, right side. Sitting posture. Duration of bone in situ, three hours. Time of removal, one minute.

No. 4—E. C., 22 months, Feb. 7, 1925. Peanut in right bronchus.

History: Child was brought in to County Hospital with history of having been fed peanut brittle on January 31, 1925. Child had been treated before admission to Hospital, for pneumonia. On admission, child was breathing laboriously and had rattle in the lungs. Physical examination: Temperature, 99.8°; pulse, 110; respirations, 34. Chest resonance clear over both lungs. Slight bronchial breathing over right lung, anterior. Small amount of large moist rales heard over right lung. X-ray: considerable inflammatory reaction around lower right bronchus, which is probably site of foreign body. (Dr. L. C. Kinney.) Bronchoscopic examination: Right bronchus shows edema and ulcerations with granulation. Through granulations reveal white foreign body, which was macerated. Removal of peanut in four pieces, using bronchoscope and long straight grasping forceps. Duration of peanut in situ, about one week. Time of removal, thirty minutes. Following removal of foreign body child continued with pneumonia, having a temperature varying from 100° to 104°, with usual symptoms. X-ray, Feb. 20, 1925: Chest shows pneumonia, right base. Recovered and discharged from hospital, Feb. 28, 1925.

No. 5—Mrs. I. F., 65. Nov. 2, 1926. Fishbone in cricoid narrowing.

History: Eating fish night before and on account of having false teeth did not notice fishbone in mouth. Swallowed bone and immediately choked. Called family doctor about eleven o'clock at night, who admitted her to hospital the next day. Examination: Patient invalid and bedfast for two years. High blood pressure. Myocarditis, unable to lie on left side at all. X-ray report: There is an abnormal shadow in the midline at the level of the fourth and fifth cervical vertebrae, which probably represents the fishbone faintly outlined. (Dr. W. O. Weiskotten.) Under local anesthesia, removed rib of fish 1⅜ inches long from hypopharynx, just above cricoid narrowing, high end pointing to right wall and stuck into wall. Opposite end to left and lower. Bone broken ¼ inch from the end. Instruments used, pharyngoscope and alligator forceps. Sitting position. Duration of bone in situ- nineteen hours. Time of removal, one minute. Patient remained in hospital for three days, running slight temperature, had sore throat, difficulty in swallowing, some edema. At end of the third day much improved and sent home.

No. 7—H. W., 37. Feb. 3, 1927. Bent pin in bronchus. History: Coughing spells about 1914, thirteen years ago. Would take off belt and put around chest or lay hands on chest, which would give relief. For the last ten or twelve years slept on face with hands across chest. After went with destroyers, one month ago, surroundings were damp and started coughing again. Coughing right along, but not spasmodically, until one month ago, sometimes one or two spells a day, lasting from fifteen to twenty minutes and seemed as if he would strangle. Coughed hard, raised phlegm, and got relief. Night sweats. X-ray taken showed foreign body, bent pin, in right bronchus. Sent to U. S. Naval Hospital. Gave ¼ grain morphine sulphate, 1/150 grain scopolamine, one hour before painting throat with cocaine. Operation, February 7, 1927. Findings: No ulcerated areas but two or three nodulated fibrous masses where pin has caused constant irritation. Removed rusty bent pin from right secondary bronchus. Pin so rusty it broke at bend when being pulled into bronchoscope. Grasped point with long Tucker tack grasping forceps. Time of removal, two minutes. Duration of pin in situ, fifteen years. Feb. 10, 1927: Last night had pain in chest and up until nine o'clock this morning, when disappeared. Thought perhaps it was due to sleeping in close steam-heated room. March 1, 1928, no more coughing spells and feeling fine.

No. 8.—T. C., 2. Dec. 10, 1925. Penny in esophagus. History: While playing on floor three days ago swallowed penny and x-ray taken by Doctor Apple of El Centro showed foreign body in throat. Child unable to swallow foods but could swallow liquids and water. X-ray: There is metallic foreign body in the neck opposite the level of the seventh cervical vertebra. (Dr. L. C. Kinney.) Examination: Pharynx and esophagus edematous and red. Coin bathed in heavy tenacious mucus and sunken in edematous tissue. Removed penny from esophagus, no anesthesia, with six millimeter esophagoscope and long grasping forceps. Duration of penny in situ, three days. Time of removal, one minute. Good recovery.

No. 9—R. N., 35. Oct. 29, 1927. Bone in pharynx. History: While eating spare ribs and kraut at 12:30 noon today got a piece of bone in throat. When swallowing bone had terrific choking spell and thought was going to die. After awhile felt better and able to breathe easily, but sharp pains continued in throat.

Admitted to County Hospital. No x-ray taken. Examination: Foreign body in right pyriform fossa, upper end sticking in right side, into lateral wall of pharynx. Could not see lower end. Under local anesthesia, removed bone from crico-pharyngeal area with pharyngoscope and alligator forceps.

No. 11—Baby C., 2½. Nov. 26, 1922. Coin in esophagus. History: Two months ago swallowed penny and passed from rectum, found in stool. This morning at 8:30 swallowed penny and choked. Has been vomiting off and on all day and very drowsy. No x-ray was taken. Examination with fluoroscope shows coin in esophagus at sternal notch. Removed coin with pharyngoscope and alligator forceps. Time of removal, three minutes. Duration of penny in situ, ten hours. Good recovery.

No. 14—Baby D., 18 months. 1922. Screen in cricoid narrowing. History: Child was playing on floor and mother thinks piece of screen was brought in by another child from the street. Noticed child

choking and tried to remove foreign body with finger but unsuccessful. Admitted to County Hospital next morning. X-ray showed screen in cricoid narrowing. With no anesthesia removed with pharyngoscope and alligator forceps. Time of removal, one minute. Duration of screen in situ, sixteen hours. Size of screen, ¾ by ½ inch, ragged edges. Good recovery.

No. 17—M. M., 7, metal slug in pharynx. History: Out playing with children. Had large slug in mouth and accidentally swallowed it, lodging in throat. Severe pain on swallowing and unable to turn head to right or left. Chin up and shrugged shoulders when swallowed. Operation: Removed slug from throat with pharyngoscope and alligator forceps; no anesthesia. Time of removal, one and a half minutes. Duration of slug in situ, three hours. Diameter of slug, one and a half inches. X-ray by Dr. McCausland shows metallic body in pharynx.

No. 20—Mr. S., 86. March 17, 1928. Large piece of meat in larynx. History: Deaf, blind. Has been ill for good many months. Has been on restricted diet. Aged lady caring for patient gave him tray with large chunks of roast beef, then left room. Soon heard him gagging and a man in the house removed large piece of meat from his mouth, thinking that was all. Called a doctor, who upon arrival found patient very cyanotic; heart still beating, but in three minutes patient was dead. Post mortem examination: Removed large piece of meat from larynx where it completely capped the larynx, blocking the airway. Meat measured 2¼ inches by 1¾ inches by 1 inch. Laryngoscopic, bronchochoscopic and esophagospic examination after removal of chunk of meat revealed no pathology. This was all done post mortem one hour after death.

Comment: Had this man had a tracheotomy immediately upon arrival of the doctor who was called in attendance, his life would have been saved. However, the doctor was prepared to do none of these things and a large piece of meat having been removed, felt there was no more in the mouth or throat that could be removed and possibly a piece had been lodged in the larynx or trachea. However, with a man eighty-six years of age, blind and deaf, in my opinion this was a very happy termination for him.

No. 21—C. B., 4 months. March 24, 1928. History: At 10 a. m. was brought in to office by emergency police ambulance with history of having swallowed safety pin. Sent to County Hospital where antero-posterior x-ray was taken, at 11 a. m., showing a closed safety pin in the left bronchus. At 2 p. m. the same day, without further x-ray or fluoroscopy, examined bronchi for pin. Unable to find it. Another x-ray revealed pin in abdomen. Child had some difficulty with subglottic edema yet at no time cyanosis. Ran slight temperature. Discharged from hospital in four days. Pin was recovered by sifting the stools at 5:30 the next morning.

No. 22—M. J., 2. March 31, 1930. History: Admitted to the San Diego County General Hospital. Patient swallowed peanut Thursday, the 28th. Chest: Whistle on examination heard throughout both lungs. Percussion same throughout. No rales. Peanut in situ, four days. Bronchoscopy April 1; time, 30 minutes. Findings: inflammation of trachea and bronchi with marked swelling of left main bronchus. Meat of peanut in secondary left bronchus to median line. Operation, removal of foreign body (peanut meat).

No. 23—E. C. G., 5 months, March 17, 1931. History: Brooch pin in throat for two hours. Child brought to my office with Dr. Parker holding head down so that saliva could run from mouth to keep child from choking. Brooch, with shoulders of brooch in esophagus, neck in cricoid narrowing, and face of brooch to face the back of pharynx. Fish-hook-like connection where pin was fastened onto body of brooch. This was hooked into posterior surface of inter-arytenoid space, pin point was up in epipharynx, that is, above soft palate. Operation: Child-size laryngoscope with alligator forceps grasped point of pin and attempted to pull out pin but would not give, grabbed head of pin and attempted removal but would not give loose. Then pushed down and toward posterior wall of pharynx and pulled toward epipharynx and loosened fish hook connection and removed foreign body. Fig. 6a.) Sent patient to County Hospital for observation on account of possible post-operative edema. Next morning child was discharged well, no difficulties. and had nursed twice before discharge from Hospital.

Fig. 6

Fig. 6. Foreign bodies reoved by per oral endoscopy.

(a) Case 23, brooch removed from pharynx.
(b) Case 26, piece of rabbit bone removed from esophagus.
(c) Case 29, open safety pin removed from esophagus.
(d) Case 30, safety pin removed from hypopharynx.
(e) Case 31, fish bone removed from posterior wall of pharynx.
(f) Case 32, piece of wire removed from hypopharynx.

Case No. 24—Mrs. K., 64. July 7, 1930. History: Sent from police station. Satsuma plum pit in throat yesterday at 2 p. m., eating same and pit got in throat. False teeth. Unable to swallow saliva. Examination: Satsuma plum seed lodged in upper third of esophagus. Removed in few minutes time, local anesthetic.

No. 25—D. S., March 27, 1930. History: Two years ago this June got some lye out of a can and caused lye poisoning. Dr. Winters treated and told mother to give pure vinegar. Always getting food blocked in throat. Now has piece lodged in esophagus and unable to swallow for twenty-four hours. When saliva forms has to spit it out. Examination: Throat negative for redness but mouth fills with saliva and must spit it out. Esophagoscopy in office this date. Removal of olive pit. Passed bougies Nos. 5, 6, 9, 10 and 12.

June 18, 1930, removal of large mass of orange pulp from above stricture. Examination revealed the lumen much larger than formerly.

No.26—M. F., 65, Nov. 29, 1929, admitted to the Scripps Memorial Hospital at La Jolla for diagnosis and x-ray revealed a large mass in middle third of esophagus with radiations to the lateral walls of the chest. She was unable to raise her arms to comb her hair. Had a temperature of 99° to 100° and pains in chest. She was suspected of having a carcinoma and Dr. Sherrill of the Metabolic Clinic requested me to make an esophagoscopic examination. On reaching the cricoid narrowing I found

the esophagus ballooned and filled with sour watery contents, the middle third was almost completely blocked with swelling and granulations. On removal of granulations for biopsy I felt my forceps in contact with very hard substance which was removed. This was a piece of bone. (Fig. 6b.) On further taking of history patient stated she had cooked a rabbit stew, two months before, for her boys, and that she ate some mashed potatoes with gravy on them, at which time her esophagus became blocked, but with no choking feeling. In twenty-four hours following removal of foreign body, her pain was entirely gone, she could raise her arms above her head, and in four days the x-ray showed the esophagus to be practically normal when the patient was discharged. She has been well since.

No. 27—J. K., age 12. Nov. 27, 1929. History: Pin in mouth while playing at school. Swallowed same, lodged in cricoid narrowing according to x-ray by Dr. Kinney. Foreign body slipped down into esophagus, lower third. Removed in one-half minute, ether anesthesia. S. R. W. C. pin with point out of keeper and spread about ½ cm.

No. 28—P. H., 10 months. February 11, 1931. History: Swallowed open safety pin, open point down. X-ray from U. S. N. Hospital shows open safety pin with point down about middle third of esophagus. Examination: Esophagoscopic, saw pin once and then it slipped down into stomach. X-ray immediately after esophagoscopy: There is an open safety pin 2.2 cm. in length within the cardiac portion of the shadow of the stomach. (W. O. Weiskotten.) Pin recovered from stool in two days.

Case No. 29—G. L. D., 4. Aug. 27, 1930. History: Patient entered as an emergency, having swallowed an open safety pin this afternoon. Complains of soreness in throat and is hoarse and has pain with deglutition. Fluoroscopy by Dr. Masserman revealed safety pin (open, angle 35°) lodged transversely in esophagus.

Operation at 5:40. Findings: Medium-sized open safety pin with point to left and up and keeper to right in upper third of esophagus. Removal of open safety pin with esophagoscope and tack forceps, ether anesthesia, twenty-five minutes. (Fig. 6c.) Note: Child was given codeine, gr. ½, and atropine, gr. 1/300, at 4:15. Operation at 5:40, saw pin in esophagus with esophagoscope but patient would not be still and interne and nurses could not hold patient, then gave ether and removed pin during primary anesthesia in a very short time. Altogether, twenty-five minutes. Patient discharged well, September 1, 1930.

Case No. 30—J. C., 7 months. May 22, 1929. History: Playing with cloth doll and had cap pinned on back and front and pulled cap and opened pin, then swallowed it. Examination: Well-nourished baby with open safety pin in hypo-pharynx, opposite the fourth cervical vertebra. X-ray, Dr. L. C. Kinney. Removed pin (Fig. 6d) with child laryngoscope and alligator forceps. Grasped at loop, ethylchloride anesthesia. Two minutes. Attempted before anesthesia, altogether ten minues.

Case No. 31—W. L. L., 57. January 4, 1930. History: Fish bone in throat since last night. Got out two pieces but feels scratch when swallows. Examination: Small piece of bone sticking into posterior wall of pharynx just below upper end of left arytenoid. Cocainized throat, gave 1/500 atropine (H).

Removed bone one inch long (Fig. 6e) buried into posterior wall of pharynx for over ¾ inch; time, ½ minute.

Case No. 32—T. B. M., 50. Dec. 19, 1929. History: Foreign matter in esophagus. Upper teeth false. Eating tongue Saturday night and had choking sensation at time and attempted to dislodge with piece of dry bread. Monday morning felt better, only time feels it is when swallows. Examination: Indirect, larynx red, no visible foreign body and arytenoids will not come forward from posterior wall of pharynx, due to inflammation and edema.

December 19, 1929. First esophagoscopy examination, so much redness and edema unable to find foreign body, passed scope to stomach, returned and carefully looked on return then passed scope two or three times and looked closely at walls and unable to find foreign body. Dec. 20: edema and redness of pharynx more pronounced. Dec. 21, 22, 23: condition improved. Dec. 24: found wire in right side of hypo-pharynx with both ends embedded in edematous inflamed tissues, with only ⅛ to ¼ inch in center exposed in a fold in mucous membrane. Passed pharyngoscope to wire and pulled wire into scope. (Fig. 6f.)

DISCUSSION

DR. H. T. BAILEY (Phoenix): Dr. Brown has shown us that the bronchoscope and esophagoscope are very valuable in removing foreign bodies from the air passages and the esophagus, but they are also valuable aids in studying pathology of these passages. For example, he has shown you pictures of dilated bronchi, also an esophagus that was so dilated as to look like the beginning of a diverticulum, and here, gentlemen, is where an unskilled man may pass a bronchoscope into a dilated esophagus or into a diverticulum and rupture the esophagus. In the air passages one can study many pathological conditions as papilloma, ulcers, bronchiectasis, chronic abscess of the lungs, cancer, et cetera. In regard to pain, many times a patient will deceive you as to location of a foreign body. For example, I had one patient who said that while eating soup he had a bone lodge in the upper part of the trachea. He said he knew the bone was there because he could feel it there. I found the bone partly buried in the right tonsil but under the anterior pillar in such a position that it could not be seen until the anterior pillar was raised or lifted forward and out. Another patient said that while some one was painting his nose with an applicator covered with cotton, the cotton slipped loose from the applicator and was drawn into the larynx. He knew it was in the larynx because he could feel it there. I found the cotton under the inferior turbinate on the left. A peanut or other vegetable substance, when inhaled into the lung, causes pneumonia more often and more quickly than do solid substances.

When a patient complains of having a fish bone in the throat and you can not see it, paint the throat with mercurochrome, then spray the throat or have the patient gargle to wash the mercurochrome out of the mouth and throat. The fish bone takes the stain of mercurochrome and can then be seen.

Dr. Brown has shown you a lantern slide illustrating a penny in the throat. This penny is in the upper part of the esophagus because the flat side of the penny is forward. If it were in the larynx the edge would be forward. In my early experience I had a patient whose x-ray showed a small shawl pin in the right bronchus. I tried to remove this under general anesthesia. The child awakened about the time I grasped the pin. During the coughing and gagging I loosened my hold on the pin and removed the bronchoscope. The child swallowed. The next day another x-ray showed the

pin in the region of the appendix. Later it passed with the stool.

DR. J. J. McLOONE (Phoenix): I would like to tell about one of my cases of bronchoscopy which I had several years ago, as it was rather unique in its etiology. A case of a foreign body in the esophagus was referred to me early one August morning. The history given by the patient was as follows: About 4 a. m., his thirst being very intense, he hurriedly seized a bottle of beer and removed the cap with his teeth. The contents of the bottle not being cold, the air impact blew the bottle cap into his esophagus. When first seen he had already had his x-ray made and this showed a round serrated body just below the crico-pharyngeus. The cap was removed with little difficulty and patient was advised in the future to use an opener instead of his teeth at any time he wished to quench his thirst.

PRENATAL CARE

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(Read before the Fortieth Annual Meeting of the Arizona State Medical Association, held at Nogales, May 7-9, 1931.)

We are all familiar with the great progress made during the past decade in surgery, preventive medicine, and methods of caring for the sick, but it is only during the past few years that there has been any consideration for the expectant mother.

I have found the following prenatal regime of great value in the prevention of miscarriage, the delivery of healthier babies and the conservation of the mother's health as well as life itself.

A careful history should first be taken with special attention to those diseases affecting the heart, kidneys, and lungs, and if the patient is a multipara, we should inquire regarding any complications of former pregnancies. As we all know, diphtheria and rheumatism frequently show heart lesions as sequelae and nephritis is the usual complication of scarlet fever, this condition frequently persisting to chronicity.

From a standpoint of life for the mother, pulmonary tuberculosis is, to me, always an item of grave concern. A careful physical examination is very necessary. This examination must be comprehensive enough to give us a true picture of this patient's physical condition. The basal metabolic rate, blood test, urinalysis and blood Wassermann, all give us valuable information.

Examination of the pelvis, including measurements, reveals pathological conditions of the pelvic contents such as patulous eroded cervix, or possible tumor, situated in such way as to interfere with delivery, and an occasional pelvic deformity. This examination should be made in the early months of pregnancy and must never take the place of periodical examinations necessary as the pregnancy progresses. Periodical examinations include routine blood pressure, urinalysis, determination of fetal heart sounds and position and presentation of the fetus. A cleaning up of all foci of infection, wherever they may exist, whether in teeth, tonsils, or sinuses, is strictly in order. The false idea that any surgical procedures relating to sources of infection, such as extraction of a tooth, removal of chronic infected tonsils, or the drainage of a purulent sinusitis, might be the cause of miscarriage should be explained to the patient as erroneous.

A patulous eroded cervix must be regarded as a source of infection and might be the cause of nausea and vomiting. This condition is well treated with application of 10 per cent silver nitrate solution and, if necessary, cauterization, carefully avoiding rupture of the amniotic sac. Of course any suspicious vaginal discharge requires microscopic examination and, if gonococci are found, the condition should be treated. Due to the fact that 25 per cent of all pregnant retro-displaced uteri end in miscarriage, special instructions should be given the patient to avoid all strenuous exercise and sexual intercourse, with rest in bed at those periods corresponding to the menstrual epochs.

The heart probably suffers more than any other organ during pregnancy. The fact that one fails to detect a valvular lesion does not satisfy us that the patient has a heart capable of withstanding the strain of pregnancy. Cardiac distress following exercise is very suggestive of myocardial insuffiency (decompensated heart) and a teleo of the heart and an electrocardiogram will help to guide us in handling this very common complication.

With a heart low in reserve, rest in bed will frequently prevent a loss of compensation. Recently a patient came to me, six months pregnant, with dyspnea, a pulse rate of 130, and swollen feet: in other words, classic symptoms of decompensation. Rest in bed was ordered and, with no other treatment, all signs of decompensation had disappeared after a few weeks. The patient was kept in bed almost constantly and was finally delivered of a full-term baby and made an uneventful recovery.

Many cases of pregnancy are complicated by incipient tuberculosis, or reactivation of an old tuberculous focus, and there are also cases of advanced tuberculosis which had better be considered as tuberculosis complicated by pregnancy. The opinion among

physicians is about equal as to the method of procedure in these cases. In fifteen cases of tuberculosis, graded from arrested to far advanced, fourteen improved during and after pregnancy; the single case, which terminated in death, was not known to have the disease until she had a large pulmonary hemorrhage, which was the forerunner of an overwhelming infection. One of the fourteen cases applied to me for care at the end of the third month of pregnancy. She was 38 years old, had two children, aged 10 and 13, and had had pulmonary tuberculosis for the past ten years. For five years previous to her pregnancy, she was an absolute bed patient and at the time of pregnancy was up only for meals and bathroom privileges. Her general condition improved during pregnancy and she gave birth to a baby that weighed 7 lb., 9 oz. This patient is at this time in better condition than at any period during the last ten years.

I did not realize the frequency of hypothyroidism in obstetrics until I had determined the basal metabolic rate in seventy-three cases, and was impressed with the valuable information obtained therefrom. I make this test a routine procedure. During the first four months of pregnancy the basal metabolic rate fluctuates considerably, but after this time it remains more constant minus results showing a large preponderance. In the seventy-three cases, 80 per cent were minus, and 20 per cent **markedly** minus, ranging from minus 20 to minus 30. The hypothroid condition in the mother will be repeated in the baby. Underfunction of the thyroid produces overweight, and retards mental and physical development. Overweight at birth usually means hypothyroidism. In twenty-eight cases where thyroid was given, the minimum weight was 5½ pounds; maximum weight, 9 pounds. Only seven babies weighed over 8 pounds, average weight being 6½ pounds. One case, where the basal metabolic rate was minus 16, was given thyroid for two months, then moved to Chicago, where thyroid was discontinued, and was delivered of a 10½ pound baby. If the mother is given ¾ to 3 grains of thyroid daily from the fourth month until delivery the doses being guided by pulse rate and nervous symptoms, the development of the baby and the condition of the mother will be benefited.

Proof of the necessity of routine Wassermann is demonstrated by the percentage of positives found in 792 cases, forty women showing 4 plus positives. Of these 40 cases not all received prenatal care. Some were seen for the first time when in labor. Of the thirty cases given treatment during the early months of pregnancy, only one aborted. Twenty-nine term babies were delivered.

In a case from my records, seen first in labor, a macerated baby was delivered. Examination of mother's blood showed 4 plus. Two years previous to this time she had given birth to a full-term, macerated fetus. This woman refused treatment, but came back a few months later, three months pregnant. Anti-syphilitic treatment was begun and lasted throughout her pregnancy. Since then she has been delivered of two full-term babies with no signs or symptoms of syphilis. These children are now four and three years old respectively and apparently in perfect health.

Of the total maternal deaths incident to childbirth, 20 per cent can be attributed to toxemias of pregnancies, which may be classified as follows:

1. Simple nausea and vomiting;
2. Pernicious vomiting;
3. Low reserve kidney;
4. Nephritis complicating pregnancy;
5. Pre-eclampsia;
6. Eclampsia.

The treatment for nausea and vomiting depends upon the severity of the symptoms. In the milder cases sedatives such as luminal may be used, ¾ to 1½ grains three times a day; increased carbohydrates; prohibited sexual intercourse. If the case is severe and does not respond to the above treatment, it will be surprising to see the good results obtained from isolating the patient from the family. In these cases glucose is given intravenously, 300 c.c. of a 25 per cent solution, administered two or three times daily. The injection should be given slowly, at a rate not to exceed 4 c.c. per minute.

Retroversion, if considered a cause, may be corrected by pessary. Rarely do I find it necessary to terminate pregnancy on account of vomiting.

A low reserve kidney occurs in about 5 per cent of all toxemias of pregnancy. The renal function is usually normal up to the eighth month, at which time symptoms of diseased kidney may appear, such as a small rise in blood pressure and a slight trace of albumin in the urine. These symptoms disappear within three weeks after delivery and there need be no apprehension of future pregnancies, as would be the case in chronic nephritis, where we would have high blood

pressure, particularly diastolic, with albinuria. These symptoms persist long after delivery and are warnings against future pregnancies. The treatment consists of rest in bed, with restricted protein and salt-free diet, and the administration of fluids. If rapid improvement is not shown under this regime, termination of the pregnancy should be considered.

The pre-eclampsic state comprises about 5 per cent of the toxemias of pregnancy. Pre-eclampsic state comprises about 5 per cent of the toxemias of pregnancy. Pre-eclampsia, if recognized in time, may be controlled and the convulsions and coma of true eclampsia averted. Frequent blood pressure readings and uninalysis are desirable, noting the increase or decrease of albumin. These tests, together with history of headaches, dizziness, and distorted vision, will be the guide as to progress in the case. I have found the treatment in these cases to be rest in bed, saline catharsis, salt-free and restricted diet with elimination of all meat proteins. If there is no improvement, labor should be terminated. In eclampsia the factors which foretell a grave prognosis are: Rise in pulse rate and blood pressure and temperature, with increase in amount of albumin in the urine and number of convulsions and depth of coma. When convulsions are established, the patient should be hospitalized under the following regime: Hypo. of morphine, gr. ½ at first dose; then gr. ¼, repeated as often as needed to control the convulsions. Oxygen inhalation between convulsions (to relieve anoxemia). Glucose, 300 c.c. of a 25 per cent solution, intravenously, repeated every six hours. Spinal puncture, usually every six hours until pressure is normal. One or two ounces of a saturated solution of magnesium sulphate is given through a duodenal tube inserted through the nose. I do not consider eclampsia an indication for cesarean section. Nothing is done to hasten labor until the second stage, when low forceps may be applied.

In conclusion, I wish to emphasize the necessity of routine examinations in the pregnant woman. You are not only serving the patient, but yourself as well, for you will be in a better position to handle the many problems which may complicate the delivery through a better knowledge of the obstacles to be surmounted. I also wish to emphasize the importance of laboratory findings, the determination of the metabolic rate, blood chemistry and the electrocardiograph.

BIRTH INJURIES IN THE NEWBORN. ESPECIAL REFERENCE TO INTRACRANIAL HEMORRHAGE

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(Read before the Fortieth Annual Meeting of the Arizona State Medical Association, held at Nogales, May 7-9, 1931.)

Birth injuries in the newborn are almost numberless in variety. Certain among them, however, are the more common, and their frequency is so great as to provide the purpose for the presentation of this short paper. Statistics presented in the literature of recent years, coupled with our individual observations, indicate the need for closer attention to this phase of obstetrics.

Every conceivable type of injury may be suffered by the child during labor and delivery, especially if the latter is artificial. This may vary from simple and unimportant abrasions and contusions of the skin, through the gamut of cuts, tears, punctures, injury to viscera, fractures of bones, crushing or disruption of parts, even to dismemberment. Many of these are rare and are caused by an overwhelming combination of circumstances, or absurd incompetency on the part of the medical attendant, so that discussion here has no practical value.

Most of the birth injuries which concern us are those resulting from pathogenic variations in the so-called physiological function and mechanism of labor, and errors in the judgment and technic of delivery. Our attention, therefore, centers chiefly upon those which, by their frequency, their effect upon the child especially if it lives, and their susceptibility to prevention, force themselves into our every-day practice as obstetricians. A summary of the facts should enable us to draw valuable conclusions and put into force definite obstetrical principles, increasing greatly the welfare of the child as it comes into the world.

The occurrence of birth injury is much greater than we formerly believed. By far the most frequent and the most important to us is intracranial damage and hemorrhage. Lumbar puncture performed upon five hundred consecutive newborn babies at the City Hospital, Welfare Island, was reported by W. Sharp and McClaire six years ago to show bloody cerebrospinal fluid in 9 per cent. Only a few of these, however, showed symptoms, and still fewer died and came to autopsy. This tends to show some damage done to many infants which is not discovered by ordinary symptoms or methods of diagnosis. Sarbin's report in 1927 on a series of 320 fetal postmortems at the Chicago Lying-In Hospital showed over 20

per cent of the deaths due to cerebral damage and hemorrhage. Ehrenfest finds various sized hemorrhages in the brain substance in about 65 per cent of all young infants coming to autopsy. Lacerations in various dural folds are found, with or without hemorrhages, in about 50 per cent of such autopsies. Of the infants who are born dead, or who die soon after birth seemingly as the result of asphyxiation, between 70 and 80 per cent actually die from intracranial damage. J. Partridge states that in healthy mothers nearly half the infants who are alive at the beginning of labor and yet are born dead, succumb as the result of intracranial injury. Other injuries resulting in hemorrhage into viscera, especially the adrenals, fractures of the long bones, fractures and separation of vertebrae resulting in spinal cord damage, nerve injuries, especially to the seventh cranial and to the brachial plexus, as less frequent but may cause permanent damage and even death to the infant. Although statistical study is unsatisfactory, due to lack of standardization, it would seem that, of the one hundred and twenty thousand fetal deaths yearly in this country, an altogether too large percentage is due to birth injury.

While the mechanism and pathology of many of the birth injuries is simple and obvious, yet that which has to do with intracranial damage may be somewhat more complicated. It must always be remembered that more or less molding and adaptation of the fetal head to the size and shape of the birth canal is necessary in the majority of births. The close proportion, and in many cases, unfavorable disproportion between the two, requires this molding. It is made possible by the soft cranial bones and the wide sutures and fontanelles. When this condition occurs within normal limits and is brought about by normal forces, it usually serves the best combined interests of both the mother and child. When it occurs suddenly, or to a degree beyond the limits of compensation, and especially if the force is exerted either as compression or traction, putting stress in an unfavorable diameter, intracranial damage results. Chase feels that subdural hemorrhage is usually the important intracranial lesion in cases of birth trauma. It is nearly always associated with tentorial splitting.

Beneke, in 1910, described the pathology of tentorial laceration, and it is agreed by most recent authors that intracranial hemorrhages of clinical importance are usually situated just above or below the tentorium cerebelli. Holland, quoted by Dicks, clearly and briefly explains the mechanism of these tears. The septa are normally in a state of rest, and without tension. When the head undergoes changes of shape, tension on the septa is inevitable, owing to the manner of their attachment to the cranial bones. Especially when the head is compressed in the occipito-frontal diameter, with the elevation and bending of the vault, the middle two-thirds and the inferior free edge of the falx-cerebri and the tentorium cerebelli are stretched and tense. If the process is continued, the tentorium will become overstretched and tear near its free border, just below its junction with the falx. Premature infants are much more subject to this damage because of the late development of connective tissue in the fetus and the resultant lack of support to the blood vessels. Frequently there is actual contusion and laceration of brain tissue resulting from excessive overlapping at the sutures or marked depression of one or more bones of the cranial vault. I have noted the latter in the hard heads of overterm babies.

In addition to tearing and hemorrhage, there is also the effect of the general rise of intracranial pressure. It is believed that frequently the crowding down of the medulla oblongata into the foramen magnum plays an important part in fetal death. Other brains will show merely excessive edema and many small punctate hemorrhages throughout the cortex substance itself. The history of the labor will often show long delay in expulsion of the head after complete dillatation and rupture of the membranes. Long continued hyperemization of certain parts of the brain with anemization of other parts, results. Excessive engorgement of the sinuses must be considered in all these cases, and it is always present in the after-coming head in breech deliveries. Intra-uterine asphyxia, with the resultant excessive engorgement of the cranial blood vessels, is an important contributing factor in all cerebral hemorrhages and, according to Irving, has never been given the attention it deserves.

These intracranial injuries may manifest themselves in many ways, and such signs and symptoms aid in the diagnosis of impending or actual damage. During the second stage of labor the fetal heart tones may show changes. Marked slowing of the rate taken between pains is suggestive of compression, providing the other possible causes of such change are ruled out. A fetal heart rate which has been slow, then suddenly accelerates markedly in the course of a difficult second stage, is more than suggestive of hemorrhage having occurred. Irregularity of the rate has some significance providing

that peculiarity did not exist before or at the onset of labor—a point which should always be observed. Marked fetal movements when the head is on the perineum, especially if the progress is slow, should warn of impending asphyxia and the part it plays in the causation of hemorrhage. Above all, the thorough obstetrical evaluation of the case, and the visualization of what the fetus is experiencing from a mechanical and traumatic standpoint, will aid in giving early consideration to its distress and danger.

After the birth of an infant with a traumatized brain, resuscitation may be difficult. In fact, frequently it is impossible, the heart continuing to beat for some time, but respirations absent in spite of treatment. Occasionally little is noted during the first twenty-four hours. Then the attention is drawn to the feeble cry and a disinclination to nurse. An occasional child will cry more than usual. Increased tension or actual bulging may be noted at the fontanelles. There may also be unusual pallor, or intermittent cyanosis. Respiratory stridor, nystagmus, and ptosis usually are soon overshadowed by the more obvious twitchings, rigidity, convulsions and hyperthermia. The picture is then complete, especially so if lumbar puncture shows a bloody spinal fluid.

Clinically, most birth injuries are due to faulty factors in the labor or delivery, or both. Not all of them are within the jurisdiction of the medical attendant. Authorities are agreed, however, that most of the contributing causes are, as has been stated, mechanical and traumatic. In most instances of cranial and intracranial damage, it is due to the sudden or excessive compression of the head, especially in unfavorable diameters. These factors may occur in spontaneous labors, in precipitate deliveries, especially following the use of pituitrin, and much more readily if the fetus is premature. Disproportions and pelvic irregularities, a rigid cervix, a thick, heavy perineum, uncorrected malposition of the head bringing compression in unfavorable diameters, are all contributing factors. Delayed delivery under these conditions, results in many damaged fetal brains, as the time factor is frequently as important as the compression. The co-existence of the two is especially dangerous and the absence of a well-done and properly timed operative delivery may permit the immediate or later death of the fetus.

Known to everyone is the fact that birth injuries are especially prone to occur in operative deliveries from below. Failure to make true cephalic application of the forceps, too strong traction, especially when not parallel to the axis of the birth canal, together with poor judgment as to the time of attempting instrumental delivery, increase the possibilities of damage at an alarming rate. Force, especially traction, in delivering the shoulders, is frequently the cause of damage to the fifth and sixth cervical roots, also the seventh and eighth, according to Sever, who reports eleven hundred cases of obstetrical paralysis. Breech extraction and especially version and extraction with frequent frantic efforts to deliver the child in the absence of the required judgment and skill, is an important cause, not only of tentorial tears, but of broken arms, damage to the brachial plexus, ruptured thoracic and abdominal viscera, fractured or separated vertebrae with hemorrhage into, or severance of, the spinal cord, together with many less serious injuries. Cord injuries practically always follow breech extraction and are due to traction and lateral flexion of the trunk. In resuscitation of these infants, the Schultze method is reported to be responsible for the immediate death of immature infants by causing extension and diffusion of already existing small localized hemorrhages.

The future of these damaged brains is not dissimilar to that obtained in adult brain injuries. The child, of course, frequently dies. Of those that live, many give no outward signs even after many years. Frequently, though, there is paralysis, a spastic paraplegia, mental as well as physical stunting, and behavior difficulties.

Treatment is indicated according to the nature of the injuries, and needs no elaboration in those pertaining to the trunk. It is limited in its scope when dealing with intracranial lesions. In the light of our present knowledge, it comprises careful handling to prevent extension, the giving of brood intraprevent extension, the giving of blood intramuscularly or intraperitoneally, repeated lumbar puncture in certain cases, and in a few decompression operations. In nerve trunk damage anastomosis has been tried, but authorities generally report poor results. Occasionally much is accomplished, but many are left with permanent evidence of damage.

The prevention of birth trauma is our most satisfactory solution. As elsewhere in the science of medicine, even at the expense of repetition, a proper evaluation of the individual case, as well as a profound respect for the intricacies of obstetric practice, is necessaryy at the outset. A knowledge of the individual mother and babe to be born can

best be secured by careful, trained observation in the prenatal period. Many of the problems to be later met in the delivery room can be ascertained, and many of them simplified. A hemorrhagic diathesis may yield to proper prenatal treatment. Fetal size should be kept, when possible, in proportion to that of the pelvis. Induction of labor by a conservative method is indicated in a few cases where large babes, sufficiently matured, bid fair to cause dystocia later, or when the patient is definitely going overterm. In special cases, safeguarding a mother against the delivery of a premature child susceptible to damage, even if to do a cesarean section later, may be the indicated course. A large percentage of breech presentations may be benefited by external version, although this is not always without danger. Of the other malpositions, some may be corrected, while others are to be definitely noted and properly handled in labor or at delivery.

Regardless of the prenatal care given the patient, or the presence of other favorable factors, the responsibility of the obstetrician at the time of delivery is still great. DeLee continually emphasizes the pathologic trend of labor and scorns the so-called physiological nature of childbirth. The scope of this paper cannot be extended to include the didactic. Davis has read an excellent paper on breech presentation wihch was heard by many of this group, and it has been published in the April issue of Southwestern Medicine. Avoidance of haste is to be emphasized, together with force gently applied along physiological and anatomical lines. I much prefer gentle traction on forceps applied to the after-coming head, to extreme suprapubic pressure. Traction on the trunk or neck is to be slight, or none at all. Proper position and flexion of the head should be observed and brought about in all cases.

Since cephalic presentations are the most common, it is here, numerically at least, that the obstetrician is most often called upon to use judgment. With the fetus showing signs of asphyxia, the giving of an anesthetic, preferably ether, with the hard pains, has been noted to improve the babe's condition, relieving some of the pressure and permitting better aeration. Episiotomy through a rigid pelvic floor is frequently a conservative measure. Pituitrin is mentioned only to condemn its use before delivery except when strictly indicated. It has been likened to a surgical instrument, to be used only by those of utmost judgment and knowledge of its effects. Comparative competency is required in the employment of drugs producing deep narcosis and interference with normal progress in the second stage. As in delayed labor from other causes, the child runs the risk of asphyxia with cerebral edema and hemorrhage, and the need for operative measures may be precipitated. In many of these cases, to leave a fetal head compressed for hours in a pelvis or on the perineum, in lieu of a properly executed instrumental delivery, is as bad for the child as too early interference.

In all operative deliveries, strict observance of the proper indications and conditions is imperative. Selection of the proper type of procedure is all important. It is not good obstetrics to do a disastrous high forceps, perhaps through an incompletely dilated cervix, when watchfulness would have indicated much earlier a cesarean section with resultant benefit to both mother and babe. Lastly, in indicated forceps deliveries, proper cephalic application of the instruments must, and always can, be made before traction. With the head properly flexed, this traction must always be made as gently as possible, and in the direction of the longitudinal axis of the birth canal which prevails according to the station of the head.

Of no less importance is the manner of resuscitation of the asphyxiated infant. A small, localized hemorrhage may be present. Holding it head down for a long period only tends to extend the hemorrhage. Violent maneuvers are worse than useless. The cold water bath has no place in the modern delivery room. Mouth to mouth insufflation usually serves only to blow up the stomach, further embarrassing the infant's heart. While the Drinker apparatus and that of Henderson may be of some value, yet the simple method of DeLee, may be utilized by every obstetrician. With the babe in a warm water bath, a tracheal catheter and glass saliva trap removes the aspirated mucus and blood. With the catheter again in the trachea, the lungs may be gently and rhythmically insufflated with fresh air, expired air with its high carbon dioxide content if desired, or if necessary, with oxygen by filling the operator's mouth with the gas.

The newborn infant is a delicate structure and its hold on life is frequently small. Utmost gentleness and consideration by the attendant is often necessary to give it the chance it should have. To quote the thought of DeLee, it will be only when the high pathologic dignity of obstetrics is recognized by the profession at large that our results will approach what they should be.

DISCUSSION

(Papers of Dr. R. K. Smith and Dr. Floyd B. Sharp)

DR. C. E. YOUNT, Prescott (opening):—A few

years ago I made the plea before this Association that a well balanced program for the annual meeting should always contain at least one paper on an obstetric subject. Today I desire to express, first, my appreciation of the success of the Scientific Committee in having secured two excellent papers on obstetrics; second, to thank them for the honour and privilege of opening the discussion, and, last but most important, to thank the essayists for the excellence of their dissertations.

As pointed out by Dr. Smith, prenatal care has been a subject grossly overlooked by most general practitioners in the past, but, thanks to the rising tide of prophylaxis, it is being born shoreward as a mighty breaker, to submerge in obstetric oblivion those who will not heed its mandates.

I subscribe to practically all that Dr. Smith advocates, but in so doing I am at once reminded that "obstetrics has always been the most time-consuming and the poorest paid work a physician undertakes." (David.) The essayist has made no reference to the subject of economics, but how many of our patients can afford to have routine Wassermann tests, basal metabolism tests, blood chemistry and electrocardiographs when they need them and as often as they need them? Very few of mine could afford this expense, yet I do not deny the value of the knowledge thus obtained. To me it is, as yet, for most of my cases at least, "a consummation devoutly to be wished." However, there are a few things which we can and should do for all of our patients: careful case history, careful physical examination, routine urinalyses, blood pressure, pelvimetry and attention to all infections. These we may do at an expense of time only. Having these records, our obstetric conscience is appeased. We actually possess an intelligent working knowledge of the case in hand.

The blood chemistry, so greatly needed in the study of our toxemias, is often out of the reach of the doctor and patient. Research alnog these lines is greatly needed and "Foundations" may some day place these facilities within the reach of many who must now go without. These remarks apply equally well to the Wassermann test, cardiograph and basal metabolism.

I am glad Dr. Smith has given us his experience with basal metabolism in pregnancy. I am sure it has a great future and I congratulate him on his pioneer work. I have been doing a similar work for years with a very poor "chart" (growth and activity of the mother's thyroid as my guide.) Basal metabolism is scientifically accurate.

Using practically the same method as Dr. Smith, we have not always had the success which he has had in the toxic hyperemesis gravidarum cases. I believe these cases run in cycles. I have gone four or five years without having to perform a single therapeutic abortion on one of these cases, but within the last four months we have had three cases (liver toxic type) in which we nearly lost one patient trying to convince ourselves that the modern methods were one hundred per cent curative.

We, who practice in Prescott, find very often that cesarean section is the safest and quickest way out of an eclampsia, particularly if the emergency is the result of all the sins of omission enumerated by Dr. Smith.

How well these papers correlate each other. If we practice the regime set forth by Dr. Smith we will have fewer birth injuries in the newborn.

In considering forceps as a primal cause of many birth injuries, I like to fortify my obstetric conscience with the thought that "practically all forms of injury from forceps can be produced by spontaneous delivery, including rupture of the globe" (Edgar). I well recall the surprise occasioned by my first experience with a stillbirth in spontaneous delivery, death from cerebral hemorrhage; the patient, a buxom young negress, primipara, with the most forceful pains I had ever seen, a quick delivery,, but to my horror, a head crushed as severely as by any forceps delivery I have ever witnessed. Personally, my greatest birth traumas to child and mother come in primiparae with eight occiput posterior positions and breech presentations. Here the erudite as pointed out by Dr. Sharp, are often called upon to exercise all the skill gathered from their superior training, but what of the rank and file who practise obstetrics? The rationale of the procedure chosen often calls forth our best, the delivery frequently in the midst of most unsanitary surroundings and without trained assistance. I have the deepest respect for the men who thus achieve success, nor do I withhold my admiration for the man who, with due eclat, can master these difficulties in the modern home or hospital with trained assistants.

I think that we might experience a certain reduction of birth injuries by cultivating an obstetric conscience based on the excellent postulates of our essayists. Particularly should we avoid undue haste: you have no engagement to play golf, attend a dinner party, or tell your kiddies a bedtime story; your job, like Mr. Brittling's, is to see it through.

Mathiew and Holman stated, in 1929, that "A recital of the methods of resuscitation of the asphyxiated newborn in vogue at present sounds like a chapter from "Mother India." Nowhere in present day medicine can one see such an antiquated, unscientific and haphazard procedures as those practised in the attempt to induce the newborn child to take its first breath." Concerning this point I have held similar views for some years and even now shudder when I recall the instances of mayhem that I have practised in the name of science. However, when we consider Katherine Mayo's book as it depicts obstetric practices in India, with their appalling maternal and infant mortality, I am inclined to stand with the Pharisee and exclaim, "God, I thank thee that I am not as other men." But these two excellent papers have pointed out our sins of omission and commission and now I stand with the Publican and exclaim, "God, be merciful to me a sinner." To resolve here and now to raise the scientific standard of our obstetric practice and give our cases the meticulous care they deserve, is to "return to our house justified."

DR. D. F. HARBRIDGE, Phoenix:—Quite some years ago a baby was brought to me in a very cyanotic condition and with enormously proptosed eyes. The birth had been spontaneous and unattended. The cord was wrapped tightly around the neck, thus exerting unusual pressure, all but causing complete strangulation. Some time later, after subsidence of the condition, the fundi were examined but no evidences of retinal hemorrhage were made out.

In instrumental and hard labor, occasionally certain ocular disturbances are observed such as moderate proptosis, paralysis of one or more extra-ocular muscles, ptosis, rather rarely, direct trauma to the eyeball due to clumsy use of the attendant's hands, and certain corneal injuries. These latter injuries are usually observed in babies born of rachitic parents in whom pelvic roominess is impaired. These linear opacities may be a single line vertical, or oblique across the cornea, or perchance they may be in pair vertical or horizontally placed. Thomas and Buchanan, of Glasgow, and also Sydney Stephenson of London, have gone into this subject rather thoroughly.

The use of the ophthalmoscope in the care of pregnant women is important. Much advance information of impending danger can be obtained by the use of this instrument of precision. Eclampsia is not primarily a disease of the kidneys but is a

condition due to toxins resulting from the products of conception. These toxins seem to have a predilection for the eye and kidney. Changes in the retina and retinal vessels, significant of impending danger, can frequently be detected long before any kidney involvement is evident through the finding of albumin in the urine. It is quite possible that eclampsia has an endocrine aspect. In view of the fact that our endocrine is simply a part of a change, it is interesting to speculate upon what relationship the thyroid, particularly the para-thyroids, in connection with blood calcium, have to do with the situation. In high blood pressure the perivascularis becomes edematous and thickened and thus interferes with the proper transfusion of blood from the fine capillaries to the venules. With the ophthalmoscope one examines, within the eye, such changes in living tissue with almost microscopic accuracy.

DR. J. M. GREER, Phoenix:—I should like to discuss this paper, "Birth Injuries to the New Born," from the orthopedic standpoint.

Recently, under the activities of the "Arizona Society for Crippled Children," orthopedic clinics, that is, diagnostic clinics, have been held in the Globe-Miami district, in Tucson, and in Phoenix. As yet, a report has not been compiled tabulating the different types of cases seen at these clinics. This will be done, however, and I hope will be published in "Southwestern Medicine." I am told by Dr. Kennedy, of Globe, and by Dr. Clyne and Dr. Gore, of Tucson, that at these clinics there were a great number of spastic paralyses seen and the question of birth injuries was brought to the attention of all who were present at these clinics. In Phoenix we had been complimenting ourselves upon the very few spastics that we had, as they did not appear at the weekly orthopedic clinic held at the Social Service Center. When the diagnostic clinic was held, all the spastics came out and we were really astonished at the large number. I wish that every obstetrician in the state could have been in attendance at these clinics in order really to appreciate what a serious problem this is. As you all know, most of these cases are all but hopeless from a treatment standpoint and their care is a most difficult and heart-rending task from the standpoint of the family. These people are kept from sight, to a large extent, and the family suffer in silence. The public know very little about it. Even the medical profession seldom see these cases and do not realize the hopelessness of the problem. Anything that can be done to prevent such cases will be a most wonderful thing in allaying human grief and suffering.

DR. R. K. SMITH (closing):—Dr. Sharp has given a vivid presentation of intracranial trauma in the newborn. He has brought to our attention the factors in labor and delivery that may cause this condition. He has emphasized the fact that prevention is practically the only cure.

At the Dallas Southern Clinical Society, a few weeks ago, Dr. Grulee, of Chicago, was asked the treatment of cerebral hemorrhage in the newborn. He said the best treatment known to him was to let it alone, that the diagnosis could not be made until 24 hours after birth, and the damage to the brain had been done. He warned us of the difficult differentiation between cerebral hemorrhage, edema of the brain, and congenital heart anomalies. He also mentioned the increase of intracranial pressure caused by the bowing of the back in performing the spinal puncture, and the dangers to the soft brain in a cistern puncture.

But when we see these babies a few months later with spastic paraplegia, epilepsy, et cetera, we then feel the importance of following Donald Munro's "Immediate Treatment of Intracranial Injury in the Newly Born."

While the baby is in shock, it should be kept absolutely quiet in its crib, with external heat and small amount of fluid by mouth through a medicine dropper. Once the baby has recovered from shock, the bleeding and clotting times should be ascertained. If not normal, whole blood should be given intramuscularly or intravenously until the bleeding and clotting times have become fixed at normal. Then spinal punctures should be performed, and manometric pressure measurements made, and spinal punctures repeated as often as necessary to keep the pressure normal. Usually once in the 24 hours is sufficient. In some of the more severe cases one drachm of a saturated solution of magnesium sulphate may be given by rectum.

I enjoyed hearing Dr. Sharp's paper very much indeed.

I agree with Dr. Harbridge concerning the importance of frequent ophthalmocopical examinations in obstetrics, and, while it was not mentioned in this paper, our eye specialist, Dr. Comer, makes these examinations for me. I am not familiar with their use. Especially do we know their value in differentiating chronic nephritis and low reserve kidney. In the former we find albuminuric retinitis and nitrogenous retention.

In closing, I wish to emphasize the importance of preventing abortions, and to do this we must remember the following causes: endometritis, endocervicitis, irritable uterus, retrodisplaced uterus, hypopituitary, hypothyroid, sexual intercourse, chronic nephritis, syphilis, lack of vitamin B.

DR. SHARP (closing):—We have listened to an excellent paper on an important subject. Dr. Smith has not only ably discussed prenatal care, but has given us definite suggestions as to its accomplishment. The development of this phase of obstetrics has marked the greatest single advance in maternity work. Benefited the most, perhaps, is the mother. Proper prenatal care is by far the best way, and frequently the only way, of keeping pregnancy and childbirth a physiological function. We have a branch of the science of medicine known as "preventative medicine." Prenatal care, properly given, is "preventative obstetrics," and the value of prevention of pathology is unquestioned. Prenatal care is still more. It is also pre-operative care, and prepares the woman for those hours when she must run the surgical risks of pain, hemorrhage, infection, sometimes shock, anesthesia, and actual operative procedures. If there are those still uninformed as to these risks, or as to the responsibility of the medical attendant, we refer them to the statistics on maternal mortality made available by the U. S. Department of Labor.

Stimulated by these statistics, there are, from time to time, articles in lay publications, and usually written by laymen. These are calculated to inform expectant mothers as to the need for medical care during pregnancy. I regret that, so far, the medical profession has not taken a great initiative in this education of the public. It has come mostly through lay organizations and publications. Much is still to be accomplished in this education, and I think it should come through the profession, not alone the obstetrician but, when opportunity presents, by every doctor. This should be our next great advance. With all expectant mothers properly informed, most of them would apply early for care. Many of our problems would be simplified and our patients' welfare markedly improved.

The injuries which come to the attention of the orthopedic surgeon have been underestimated. We deplore the birth injuries which cause these cases. They are much more frequent than they should be

SUDDEN DEATH AFTER SPINAL ANESTHESIA

(Sensitization Phenomenon and Adrenalin Suspected as being Cause; Another Case Reported in Which Convulsion Followed Use of Adrenalin.)

ORVILLE HARRY BROWN, M.D., F.A.C.P.
and
LOREN C. BARLOW, M.D.,
Phoenix, Arizona.

A woman about 32 years of age had a hysterectomy under spinal anesthesia and nitrous oxide and oxygen part of the time in less than analgesic stage to dull her sensorium and remove apprehension. The operation was finished. She was bandaged and just ready to be removed to a cart to be taken to her room. She was entirely conscious and was talking; in fact she had talked all through the operation. Suddenly she went into a spasm involving her arms, trunk, neck and head. Respiration was promptly suspended. She came out of the first spasm and started to breathe and immediately went into a second spasm with no voluntary respiration thereafter.

For the operation, one ampule of spinocain had been introduced into the spinal canal between the fourth and fifth lumbar vertebrae with the patient in a horizontal position. The usual intramuscular dose of ephedrin was given. She was at once placed in Trendelenburg position.

The notes made in the operating room relative to her condition and the treatment are as follows: "Patient's condition was good—excellent—operation was finished, incision was dressed and she was ready to be transferred to the cart to be taken to her room. She went into a convulsion and respiration was suspended: eyes rolled upward, head was drawn back, and arms became rigid. Three minims of adrenalin were given at once and repeated every few minutes. It was given once by vein, twice in the heart and at least twice intramuscularly. Oxygen was given for forty minutes with artificial respiration. Tongue was withdrawn and throat wiped out though tongue was in good position and no mucus was in throat. Dr. Ketcherside came in early and gave assistance and later Dr. Carson inflated her lungs repeatedly with oxygen. The heart kept up contractions for at least 30 minutes. Alpha lobean was given subcutaneously."

The patient had come to our office asking for a complete physical examination. Her reason for wishing the study was that a second marriage was in contemplation; her former adventure had terminated unhappily, due probably to sexual frigidity on her part. Copulation had such terrors for her that suicide had entered her mind as a relief from it. Her other complaints consisted of a scanty menstruation for several years and an undue tenderness and fullness of breasts. A note was made that she seemed to be mentally depressed. The examination record reads as follows:

She has small tonsils; ears are negative; nose is negative; teeth are in good condition; eyes are normal; neck is negative; lungs seem normal; the heart is moderately dilated so that the apex beat is about four inches to the left of the mid line; there are no murmurs; the right margin is normal. Blood pressure is 122/74. Liver and spleen are normal size; there is tenderness over the appendix area and over both tubes.

The pelvic examination shows cervix in mid line but three times normal size. The body of the uterus is four times normal size and has partial retrodisplacement with a tumor on the anterior surface of the womb. The left adnex has no palpable fulness but is slightly tender. The right is full and tender. The appendix area is definitely tender.

Diagnosis: Fibroid of uterus; chronic appendicitis; salpingitis; slight cardiac dilation.

Blood: Hemoglobin 85; white count 5,400; red count 4,200,000; polymorphonuclears 50; monocuclears 50.

Urine: Straw; slightly alkaline, 1.013, albumin negative, sugar negative, no casts, blood or pus cells, acidity 5.

Vaginal Smear: Many pus cells; no gonococci found.

The pathologist's reports upon the operation specimen is as follows: "Multiple subserous fibroids, sections showing characteristic structure myofibroma with diffuse hyalinization. Appendix shows slight fibrosis of walls."

The autopsy done by Dr. W. Warner Watkins was reported as follows: "Patient was a well preserved woman; apparent age about thirty years. Recent operative wound in the abdomen. Thoracic viscera removed by usual incision; pleura was moderately adherent on each side, but adhesions could be broken with the fingers; lungs and heart were removed intact. Lungs were normal in consistency and appearance, showing no evidence of infarct. Heart was slightly enlarged; but valves were normal and there was no evidence of infarct. Abdomen: Stomach distended with gas, but intestinal tract was normal in appearance. Liver showed considerable variation in color, with patchy reddish areas alternating with pale areas. Spleen was normal in appearance on cut surface. Kidneys were normal. Skull cap was removed, brain being normal in gross appearance throughout. Section of the brain showed no evidence of vascular lesion or other abnormality. Microscopic examination of the medulla was negative for evidence of lesions. Microscopic section of liver shows fatty degeneration, without gross change.

Autopsy did not disclose cause of death which evidently was not due to gross change in tissues of any of the areas examined.

DISCUSSION

After the examination revealed the pelvic abnormalities, she was advised that her abhorrence for the sexual part of married life probably could be overcome through frequent council with her husband and with much patience and endeavor on her part, but that it seemed the part of wisdom first to clean up the pelvis and remove the appen-

dix. She returned to the office the following day with the decision to have the operation. We were much distressed however when she informed us that she was married the night before. We could not help but wonder, especially after the death, what imprint a night of marriage had made upon her mind. No opportunity had been offered for a conference with her husband previous to marriage as had been planned. Could her experiences have caused her to hope for death?

We were again distressed on entering her room the morning of the operation to be asked to witness her signature to a long document which she said could serve as her will.

In thinking over the case, especially the detail of the last few minutes of life, one of us (O.H.B.) had the distinct impression that just as she was relaxing from the first convulsion and respiration appeared to be beginning, another small dose of adrenalin was given and in about the time it takes for adrenalin to be effective she had another convulsion and a cessation of respiration with no more voluntary effort at breathing.

One of us (O.H.B.) has since surmised that she might have been epileptic. She was of the type that what she did not wish to be known would not be told by her.

The second case (seen by O.H.B.) was a nurse who had severe abdominal distress and tetany contractions of her hands and wrists. A careful examination of her abdomen and a study of her history indicated there could be no abdominal condition demanding immediate surgical intervention. She volunteered the information that she had eaten oysters about eleven o'clock the night before and that on all previous occasions when she had eaten them they had caused her distress. The conclusion was reached that she probably was suffering from sensitization phenomena from oysters. It was reasoned that adrenalin would probably afford relief. Not over five minims were given. About the time the adrenalin should manifest its effects she went into a generalized convulsion from which she rallied only after being put in a tub of warm water. Needless to say, she was given no more adrenalin. She gradually recovered from the sensitization effects of the oysters. She was then given an adrenal cortex preparation with most satisfactory results.

INFERENCES

The convulsion in the second case immediately following the administration of adrenalin for sensitization phenomena in which the nervous system was involved, and the impression that the second cessation of respiration in the first case followed promptly after an injection makes us wonder if the death may not be charged to the adrenalin. The suggestion naturally arises that epileptics might well be gvien adrenalin only with extreme caution.

TETANUS FOLLOWING HEMORRHOIDECTOMY

E. E. PRIEGO, M.D.,
Nogales, Sonora, Mexico.

Due to the kind insistence of my friend and co-worker, Dr. A. L. Gustetter, I present the following case. It is not new, having been written over a year ago, nor are the contents new. I refer to a case which, if not the only one of its kind, is one of the most impressive I have ever had occasion to encounter. This because of the unexpected form in which it presented itself and because of the tragic outcome.

During the first days of August, 1929, Mrs. A. C. came to my office to advise me that she had decided to undergo hemorrhoidectomy which I had suggested to her about two years before. We set August 14th as date of operation, and on that day she was anesthetized, and Dr. Carrada and I performed the hemorrhoidectomy, by Gant's method. We sutured her with No. 2 chromic catgut. The day of the operation she was given two morphine injections, six hours apart, of one eighth grain each, and the following day she had the last injection.

On August 15th the patient commenced taking one tablet of opium and belladona per day. Her temperature the day of operation was a half degree over normal and the next day it was six-tenths degrees, disappearing completely towards evening of the same day.

On the morning of the 17th the patient had an evacuation, hard and dry, with no pain, the last fecal lump being spotted with blood. She was given a sterile bichloride washing and dressed. On the 18th she was feeling perfectly well. On the 19th she had two more evacuations and on that same day she was discharged. But, for some reason or other, the patient decided to stay in the hospital one more day.

On August 20th, about 2 a. m., I was called by phone from the hospital, telling me that the patient had awakened, suffering with dyspnea and that she complained of numbness of the tongue. I thought it was a case of too much opium and ordered that she be given an injection of caffeine and sparteine. At 8 a. m., I was advised that the patient continued the same, with increasing symptoms. I went to see her and found that

it was now a case of tetanus. She was having trismus and marked rigidity of the neck. I questioned the patient and she told me that on going to bed about eight o'clock the night before, she had noticed an indefinite discomfort in her cheeks and neck, which remained until she finally slept. Because of the unusual and unexpected turn of the case, but still holding doubtful hope, I called Doctors Urriolagoitia and Smelker in consultation. They confirmed my diagnosis and in spite of rigid treatment the patient died in one of many paroxysmal spasms, about 43 hours after her first symptoms.

I absolutely discarded the possibility of catgut infection or infection from instruments, as I had myself seen to their sterilization. Investigation of lesions as a source of infection revealed nothing. The only remaining factor as a possible inlet to infection was the surgical wound in the margin of the anus, and as carrier of the infection, the fecal material. Quoting Dr. S. Potter Bartley: "An enormous percentage of infection has followed operations on the intestinal canal. These cases giving the impression that infection is due to the presence of tetanus bacilli in the intestinal contents."

From the above one can see that this was a case of acute tetanus, with two days of incubation and one of evolution, having as entrance the wound on the margin of the anus and as agent of infection the fecal evacuations.

I have taken your time with a common, ordinary case of tetanus simply to recommend a prophylactic injection of antitoxin before a hemorrhoidectomy. It puts us to no effort whatsoever, and enables us to avoid bitter experiences such as mine.

DISCUSSION

DR. V. A. SMELKER (Nogales): An excellent paper from Cook County Hospital last year, gives us some interesting conclusions. At that hospital there has been no improvement in the mortality rate from tetanus in the last 15 years, although in the last 5 years a great deal more antitoxin was administered, and given intraspinally to more patients. (Calvin and Goldberg 99-25-1977). The kind of treatment, whether serum or phenol or magnesium sulphate, or ultra-violet ray, and the form of administration, intraspinally or otherwise, is of a great deal less importance than other factors, such as type of injury, period of incubation, age group, and durability of patient. Taking these later factors into consideration there is little difference in the prognosis of established tetanus now and in the days of Hippocrates.

Our present situation in this question is improved only by the tremendous value of prophylactic inoculation in any case of injury in which tetanus is even remotely likely to develop. Statistics from all the armies in the great war are fairly unanimous on the value of prophylactic administration of tetanus antitoxin. The average mortality in civil life is probably well over 60 per cent. Mortality in the civil war was very materially higher, due to the notoriously high rate from gunshot and powder wounds. In the great war, where, after the first year, practically all wounded received antitoxin, the mortality was not more than 20 per cent among those who developed tetanus after one injection within four days of the injury. Those receiving four or more prophylactic doses and then developing tetanus had a mortality rate of only 7 per cent.

The conclusions I have just quoted to you have a very direct bearing on consideration of the point taken in Dr. Priego's paper. Of course there are strong limitations to the ideal of preventing all incidence of tetanus; we know that tetanus has followed extraction of teeth, ear and nose operation, injuries of the eye, slight scratches, rooster pecks, frost bites, burns, vaccinations, and dozens of other cryptogenetic paths. We know the old idea of catgut infection is not entirely a canard. In 1928, Edinborough University reported nine cases (91-257). Catgut is made from intestinal structures and, conceivably, may be imperfectly sterilized. We also know that, so far, laboratory methods have failed to demonstrate the existence of tetanus germs in human excrement in more than a small percentage of all samples. Nevertheless, at this moment we are concerned with post-operative infection, and it is undoubtedly true that the commonest post-operative development of tetanus is due to fecal contamination. I, therefore, conclude that, wherever possibility of fecal contamination is to be considered, we are justified in further burdening our pre-operative precautions with insistence upon prophylactic antitoxin.

TRAUMA TO KIDNEY

A. W. MULTHAUF, M.D.,
El Paso, Texas.

(Meeting El Paso County Medical Society, May 11, 1931.)

The case I am going to present tonight is one of injury to the kidney from a fall. Injuries of the kidney are best divided into two groups.

1. Subparietal or non-penetrating, in which there is no external evidence of injury, except possibly a slight bruise on the skin.

II. Penetrating injuries, where there is an external wound of entrance over the kidney region or in close proximity to it.

In describing the mechanism of the injury in the subparietal type the force may be exerted either from the front, side or from behind. The kidney may also be injured in a manner which is analogous to that known in cerebral injuries, that is, by contrecoup. This mode of injury is, however, very rare. Injury by muscular action is also rare but can occur as a result of sudden contraction of the diaphragm or of the abdominal muscles; for example, after lifting a heavy weight or in abrupt flexion of the body.

Kuster was the first to offer the hydraulic

theory in order to explain injuries of the kidney, although this explanation cannot be applied to the tearing of the vessels of the renal pedicle or of the ureter. However, it serves at least to clear up the manner in which the injuries to the kidney proper occur. The kidney, when filled with blood and subjected to compression, will tear as does the skull or brain in the point where its elasticity fails to resist the compressing force. The type of injury presented in this case report can be classed as a contusion of the parenchyma. In this form of injury there is hemorrhage into the cortex and medulla without any visible tears of the fibrous capsule or parenchyma.

We shall now take up the clinical picture of kidney injury.

In cases in which the symptoms of primary shock are followed by those of internal hemorrhage, the patient is apt to continue to work or walk around until the anemia from hemorrhage around the kidney compels him to seek medical aid. It must not be forgotten that the pallor, small rapid pulse, etc., in the first hours, may be due to shock as much as to hemorrhage.

Hematuria is present in about ninety per cent of the cases; it usually is observed immediately after the injury but may be delayed if the ureter is blocked by a clot. Pain is rarely absent; in most cases it is very severe and of a colicky nature.

Peritoneal irritation may predominate in the clinical picture, with nausea and vomiting.

In the diagnosis of subparietal kidney injury, the outstanding features in the order of their frequency are hematuria, shock, signs of internal hemorrhage, localized pain, rigidity and gradually increasing swelling over the injured kidney and signs of peritoneal irritation. The diagnosis is definite when carried out with cystoscopy and pyelography.

The chief dangers of kidney injury are death from hemorrhage during the early stages, and from infection in a later period. The treatment may be divided into:

I. Expectant, i.e., conservative.

II. Operative.

Expectant treatment, in the opinion of those who have had a large experience, is the treatment of choice. Operation is indicated, (a) if the hematuria is so severe and persistent as to threaten life; (b) if the signs of internal hemorrhage are increasing rapidly; (c) if chills, fever, etc., and other evidence of infection of a perinephritic accumulation of blood and urine are present.

In regard to the operative treatment, it might be said that it presents a very difficult surgical procedure on account of the inaccessibility of the renal pedicle and on account of the bleeding which immediately commences upon dislodging the clots from the torn surfaces.

The type of treatment we employed in this case was of a very conservative nature, complete and absolute rest in bed, observation of pulse and blood pressure constantly. The convalescence was stormy for the first three days, during which time the patient was showing signs of a peritoneal irritation, due, we presume, to the reflex injury to the kidney, but at the end of ten days he was in a position to leave the hospital and now is back on his job and apparently well as ever.

THE COUNTY HEALTH UNIT

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It has been stated by numerous observers that the county health unit is the most significant advance in the field of public health work within the past few decades. That the county health unit is of comparatively recent development is due to a number of circumstances, especially being dependent upon recent discoveries in the laboratory and in field research work. The discovery of smallpox vaccination by Jenner, in 1796, gave to the world a remedy of sterling worth against the dread scourge of smallpox. The discovery of diphtheria antitoxin gave the physician a weapon which could be employed in the actual treatment of clinical cases of diphtheria, and which later was used to confer a temporary passive immunity in those who were contacts of the disease victim. It is, however, quite recently that the preparation of toxin-antitoxin was announced to the scientific world, to be followed still more recently by the toxoid preparation, thereby placing in the hands of physicians and public health workers generally, a potent weapon for the prevention of diphtheria. The discovery of the New World type of hookworm by Charles Wardell Styles—a research achievement of the first importance—gave the original stimulus to the attack on the hookworm problem in our southern states by concentrated, thorough, and scientific campaigns to free the infected areas from this scourge. The hookworm campaign opened the eyes of the thoughtful to the possibilities of valuable health work which might be accomplished by health workers devoting their entire energies to the various health problems existing in rural sections of our country. The establishment of county health units was the log-

ical sequence or result of a long chain of events, the individual links of which had been forged by physicians, chemists, bacteriologists, zoologists, and keen observers in many allied fields of endeavor.

The county health unit was devised or originated from the conviction that a trained staff of health workers, devoting its full time to the problems within a limited territory, would be capable of accomplishing the maximum of results for the money invested. While the personnel may vary slightly in various counties, the usual county health unit is composed of a physician as health officer, a nurse, who should have public health training, an inspector, and an office clerk. In individual county units, operating under scanty budgets, the sanitary inspector or the nurse is sometimes omitted. Conversely, the experiment is being tried of placing county nurses in the field where no provision has been made for a county health officer on a full-time status. This is an interesting experiment, whose development and results are being watched with great interest, especially here in New Mexico. The latest annual report of the Surgeon General of the Public Health Service states that on January first, 1930, there wwere 505 counties or districts in the United States which were provided with whole-time local health service under the direction of whole-time county or district health officers. There are in the United States approximately twenty-five hundred counties or districts.

The work undertaken by these county health units must be general in nature, making the attempt to cover the entire field of public health activities. Of these activities, that of vital statistics is held, rightly, to be of primary importance. The registration of births and deaths is a necessary project if the health administrator is to have an adequate conception of the magnitude of his problem, and if he is to be informed as to the particular health hazards, whether of communicable disease, infant mortality, occupational hazards or what-not, which are deserving of the greatest effort and attention on the part of the health unit. Coincidentally, the importance of prompt and complete reporting of cases of communicable diseases, with the prompt institution of appropriate measures for the control of their spread, is closely related to the importance of reporting of births and deaths. In the mind of the writer, the reporting of these communicable diseases is yet one of the weakest links in the chain of public health endeavor, since only too frequently the first knowledge of communicable diseases received by the health unit occurs when a death certificate shows a communicable disease has been the cause of death, or when a school child applies to the office for a permit to re-enter school, after having been absent from school for days, or perhaps weeks, due to an attack of whooping cough, measles, or other communicable disease. Better reporting and, consequently, better public health control of these communicable diseases, will result when the general public has been educated to the necessity of reporting communicable diseases, since, in the majority of such unreported cases, investigation shows that no medical assistance has been called. This education of the family must also be extended to the teaching profession, and the individual teacher must be impressed with the necessity of reporting to the health unit when school children are absent on account of communicable disease. Cooperation between those engaged in educational work and those engaged in public health work must be vastly improved before the control of communicable disease approaches an ideal. In all too many instances, cooperation between school authorities and health authorities has not yet reached a satisfactory status.

The establishment of clinic and clinical facilities by a county health unit brings out the necessity of cooperation between the county unit and various other interested groups and individuals. It has been the practice in many of the counties to place before the constituent county medical societies the plans of the county health unit for the establishment of these clinics, and to request the formal support and approval of such county medical societies. In general it has been found that, when the physicians have been taken into our confidence, have had carefully explained the type of work to be undertaken in such clinics, and have been assured that the privilege of receiving medical examinations and advice shall not be extended to those individuals who are well able financially to employ the services of the private practicing physician, the county society has given its stamp of formal approval to the establishment of such clinics and the individual members of the county society have volunteered their services as clinic physicians in many instances. The physician has often found that serivvce at these clinics has brought him an added prestige and has started patients toward his office door.

There exist in every community, larger or smaller groups of interested citizens, usually chiefly composed of women but with

here and there an interested man, which have caught a vision of the great untilled field of medical want and lack of attention suffered by many of the less fortunate inhabitants of the community. Such groups, sooner or later, arrive at the conclusion that certain situations are desperately in need of remedy, and set about devising schemes whereby conditions may be ameliorated, There arise study groups, which investigate not only the actual conditions in their own community, but reach abroad to other communities in the quest of successful solutions of similar problems. With the passage of time, a considerable mass of knowledge is acquired by these groups, some of which, it is true, may be fantastic, weird and impractical, but, in the main, a mass of knowledge which spurs the group on toward definite curative action.

Right here the county health unit will either make an opportunity to become a leader in the movement, with possibly an opportunity to shape the movement into the correct channels, or, on the other hand, by remaining aloof from the movement in its inception and formative period, lose an opportunity to offer advice and guidance, with the ultimate result of being a spectator on the sidewalk when the main parade passes down the street, possibly led by a christian scientist, cultist or faddist in the proud role of drum major. All too many times, the personnel of the county health unit have underrated the social prestige and leadership of small, seemingly insignificant, beginnings, to awaken later to the realization that the impossible has occurred, the movement has made an auspicious start, but that the health unit is not occupying its rightful place as a trusted lieutenant of the commanding officers.

If the health officer or the public health nurse will make the effort to form contacts with the leading spirits in these movements —the so-called "key individuals"—it is not a matter of extreme difficulty, as a rule, to align such movements with the work of the county health unit. The main difficulty in so aligning these voluntary health movements with official health work is based upon the woefully inadequate funds under which the average health unit is forced to operate. When the health unit is capable of offering to the voluntary health organization its assistance in the form of skilled, professional service, or in the form of furnishing necessary supplies or office space, or in the form of obtaining the necessary medical service for the consummation of the movement, the health unit usually can direct the actviities and policies of such organization. This cannot be accomplished overnight, nor can it be brought about by the assumption of an overbearing, bulldozing, know-it-all, or holier-than-thou attitude. Aside from the fundamental training in the technic of public health work, the health officer or public health nurse must be possessed of the patience of a Job, the meekness of a saint, and the pertinacity of a pet sin. The public health worker must be able to submerge himself and his interests in the success of the movement and the benefit of the people of his county. The public health worker must let undeserving leaders reap the praise and acclaim of the people for the successful project, rather than to jeopardize the outcome by insisting upon his meed of praise. The public health worker who enjoys the happy ability to endure galling, nauseating associations, smiling cheerfully and apparently liking it, while in the presence of his colleagues, but who finds relief in quietly driving out on the broad mesa and giving his tortured soul respite by artistically, systematically and emphatically expressing his deep-rooted convictions regarding the general cussedness of humanity and of the especially annoying attributes of certain exceptionally deluded individuals in particular, will frequently surprise his associates with the amount of cooperation which he can obtain in his county or community. But it must be remembered that it will require considerable time for this accomplishment, coupled with a vast amount of quiet, persistent scheming, much character analysis, some flattery, some cajolery, some calm reasoning, and possibly, at times, some rather skillful prevarication, but if the latter is used, it must have the emphasis on the "skillful."

The voluntary health organizations which are working in the field of public health, apparently are so well founded and enjoy so great financial support, that such organizations must be considered as permanent components in the campaign for public health. The recognition of this fact should lead the county health unit to make an attempt at coordination of these various organizations. We believe that cooperation and cordial relations may be attained through the institution of coordnating councils. Such a council in any locality should be composed of the county health officer, the local representative of the Tuberculosis Association, a representative from the public school system, representatives of any civic clubs which may be in existence in the community, as well as representatives from various women's

clubs and groups. These councils should meet at monthly intervals, and each organization engaged in health work should present its problems for the group thought and advice. After thorough discussion, the group should be in a position to recommend the apparent solution of the problem in mind. Perhaps the problem could best be handled by another member organization rather than the organization presenting the problem. If so, the presenting member should gracefully relinquish the problem to the member better fitted to care for the task. Perhaps the problem should be divided, so that two or more of the organizations represented in the coordinating council might solve certain parts of the general problem. We believe that the establishment of such a council, with representative council members reporting back to their individual organizations, will result in a broadening of the interest of the community in these various community health and welfare problems. However, if the success of a community coordinating council is to be assured, it must be remembered that the health department representative must exhibit an example and spirit of doing his full share of the work, of refraining from petty jealousies and antagonisms, and of being willing to occupy an inconspicuous and apparently, at times, relatively unimportant role. He should be chiefly interested in having the problem solved satisfactorily, with few if any thoughts of getting his share of the praise for the accomplishment of the task.

SANITATION IN AUTOMOBILE CAMPS

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The automobile "tourist" camp is here to stay, at least as far as any of us are concerned. However, in the last few years, especially in the Southwest, it has become more than a camp. It is, as some owners advertise, an open-air hotel. In fact, in the better class camps, the accommodations are equal to those found in a medium-priced hotel. Rooms and suites, accommodating from one to six persons, with or without private bath and with or without kitchen facilities, are available at a very reasonable price per person.

A few important items in regard to the sanitation of such camps might be enumerated. They are as follows: (1) Water supply; (2) sewage disposal; (3) milk and food supply; (4) garbage and refuse disposal; (5) cleanliness of quarters and linen.

Under the heading of water supply, it is to be recommended that, wherever possible, a connection be made to the city water supply that is under constant supervision. In many cases, these camps are located along highways many miles from a city. In these cases it is necessary for the owner to develop his own supply from a well or spring. Here the old story about protecting the well or spring from surface drainage is applicable. Where a pump is in use, provision should be made for carrying the waste water away from the well and there should be a tight concrete curb and a slab over the top. Ordinarily our well waters in New Mexico are satisfactory from a bacteriological point of view, and it is only necessary to protect the well water from pollution by surface drainage.

In irrigated sections, shallow wells may contain nothing but seepage water, which is usually highly alkaline and sometimes polluted.

Where springs are used as a source of water, provision should be made to eliminate the possibility of patrons dipping containers into the spring box. This can usually be done by making an outlet of a piece of pipe so that containers can be filled by holding them under the spout, and by covering the spring. Earth should be banked up around the side of the spring so as to carry surface drainage away from the site.

The water carriage sewage system is acknowledged the most sanitary and, again, if it is possible to make a connection to a municipal system, that should be done. Perhaps the next best is the construction of a septic tank with a sub-surface irrigation system. When a system of this type is properly built, it operates very successfully. Plans for such systems are available for distribution by the New Mexico Bureau of Public Health. The faults usually found with such systems are as follows: The septic tank is too small; it has not been cleaned in years; the tile drain is not sufficient in length; or it has been laid in a tight adobe soil with no opportunity for the excess water to leach into the surrounding soil.

The pit toilet makes a very satisfactory method of excreta disposal when it is properly constructed. The main objective is to secure a fly-tight pit. This can be done by making the floor and seat of tongue and groove material, supplying self closing lids to the seats; and by banking earth around the side of the building to make a tight connection between the building and the ground. A number of firms now manufacture a metal floor slab with a metal riser and tight-fitting

seat and cover. This layout is made of a non-corrosive steel and sometimes covered with a special asphalt coating to further protect the metal. The floor and seat can be purchased and the house built to suit the needs.

In a semi-public place, like a camp ground, it is good practice for the owner to apply a small amount of chlorinated lime, usually a tablespoonful, to each seat, daily, during the fly season. The sterilizing property of this amount of lime is negligible, but it makes an excellent fly repellant and deodorant. Many people consider that a pit toilet is unsanitary and, because of their unwillingness to use the seat as a seat, constant measures are necessary to keep the building clean.

In some installations the chemical toilet may be suitable. This type of toilet requires frequent removal of the accumulated material and recharging with a fresh chemical solution. When given the proper care, they are satisfactory, but they should not be allowed as a substitute for the box and can privy without proper disposal of the contents by burying.

Many camp-ground owners maintain a small supply of foods and soft drinks for the convenience of their patrons. Perhaps the most important, from the public health viewpoint, is the milk supply. It is always a good plan to check on the source of milk that is offered for sale. Milk and other perishable foods should be kept under refrigeration.

It is desirable to have garbage cans, with lids, located in convenient proximity to the cabins so that guests will deposit all refuse in them instead of throwing it into a more accessible corner. Removal service should be frequent, daily if possible, so as to eliminate objectionable odors and the attraction of flies. Containers will give longer service if they are cleaned at intervals. In the absence of garbage collection service, combustible refuse can be burned and the other material buried or used for filling in low areas and then covered with a few inches of earth.

It is necessary to clean and service all apartments after the guests have departed. It is necessary to keep a sharp lookout for vermin, as they are frequently left behind by departing guests. Nothing will destroy a camp's reputation more quickly than the statement that the cabins are infested with bed bugs.

Perhaps the most effective weapon in the control of camp grounds is the gossiping ability of the patrons of such facilities. For a distance of several hundred miles on each side of a camp, tourists, as they put up for the night, tell each other that such and such a camp is a nice place and that so and so's cabins are dirty and full of bugs. Such statements go a long way towards keeping the automobile camp in good sanitary condition. As soon as the owner realizes that his trade is falling off because of such gosip he will usually get busy and remedy conditions.

SUMMARY OF MALARIA CONTROL WORK IN DONA ANA COUNTY, NEW MEXICO.

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In order to avoid elaborate and, perhaps, tiresome detail, this is as brief a summary as possible of the malaria control work in Dona Ana County, New Mexico for the past three years.

Malaria, in the irrigated sections of the Southwest, particularly those sections under large irrigation projects and with accompanying necessary drainage systems of the open type, is liable to become a public health problem. Dona Ana County has these conditions and has had malaria as a problem since 1925, necessitating the inauguration of intensive control work. It is now in its fourth year of this work, and it is the purpose of this report to set forth the conditions, details, and results attained up to the close of 1930. Statistical tables will be eliminated as much as possible and used only to show comparisons, when it is more feasible so to do.

The only previous history obtainable of the existence of malaria in this valley, dates from 1862 to 1885. In 1862, when a portion of the Confederate army invaded the valley, inquiry shows that many members were malaria carriers. At this time, the Rio Grande carried much flood water, and, owing to the indefinite river channel, it frequently changed its course or overflowed, causing large areas of land to be submerged for varying periods of time. From this time and up to 1880, there existed quite a number of army posts which were constantly occupied and malaria was quite prevalent amongst the occupants of these posts. After 1885, inquiry points to the abatement of malaria, which might be ascribed to the rapid disappearance of breeding places for the Anopheles mosquito, in conjunction with the previous abandonment of the military posts, thereby removing in mass a large number of carriers.

As far as can be determined, the Anopheles mosquito has always been present in the valley in varying numbers, depending much upon the numbers and kinds of breeding places.

DISCUSSION

The irrigation method of farming has been in vogue for years, and in order to insure a steady and even water supply, the Elephant Butte dam was installed and completed in 1915. With this came an extension of its distributing system of canals and, later, the drainage system became a necessity owing to the water-logged condition of the land, producing ponds and seepages. The irrigation canals, owing to the necessity of their being kept free of obstruction to the water flow, and because of the water running swiftly through them, do not afford breeding places nor harborage for the Anopheles larvae; consequently, they are not involved in any way in the malaria problem. The drainage canals, on the contrary, are the greatest offenders, demanding nine-tenths of the time of the control efforts.

The drainage canals are from 16 feet to 24 feet wide at the water line, with an average depth of 6 feet to the waterlevel, carrying water from 1 foot to 5 feet in depth. The water carriage varies, being heaviest during the height of the crop growing season.

The first series of these canals were dug in 1918, and others have continually been added.

The average width of the valley area involved in the control work is about 4 miles, and canals parallel one another at an interval of about three-fourths of a mile. The canals were never cleaned until 1928, thus aquatic vegetation had all opportunity necessary to attain its maximum growth and distribution. This factor has provided most excellent breeding places and harborage for Anopheles larvae, and as a consequence, the Anopheles mosquitoes greatly increased in numbers. The malaria problem arose as soon as infected material came into the valley. This began in 1923, when the first malaria carriers came in, since which time they have continued to arrive in increasing numbers. The aquatic vegetation involved includes tules, myriophyllum, sedges, duckweed, water cress, and blue and green algae. This vegetation also acted as an impediment to the water flow, which resulted in the raising of the water table and consequent production of ponds. The canals are, at intervals, crossed by flumes and bridges, underneath which ideal resting places for adult mosquitoes are provided. These resting places, in conjunction with certain buildings located near the drains, are being used as observation posts to note the effect of the control measures.

I. Species of Anopheles Involved. The pseudopunctipennis and the maculipennis are the only species of Anopheles so far encountered in the Valley. The habits of the two species differ in this section and under our conditions in the following manner:

The pseudopunctipennis seeks the current in the center of the stream, in clear water and in the sunlight, for its breeding place. Its preference is for animal blood and therefore, its natural infectivity is low. Its resting places are most likely to be away from human habitation. By force of circumstances, i. e., the scarcity or absence of animal blood, its infectivity becomes higher in proportion. Its breeding water must have an alkalinity of pH 7.2, or more.

The maculipennis, in contrast to the pseudopunctipennis, usually breeds near the borders, where there is an impeded flow of water, somewhat stagnating and shaded. Its preferential feeding is human blood, and consequently, its infectivity is high. Its preferred resting place is the human habitation. It requires for its breeding water an alkalinity of pH 7.2 or more. The alkalinity of the water of the drain canals is pH 8.00.

II. Reappearance of Malaria. For a period of 30, or more, years, malaria was unknown in the Valley. The first cases became konwn to this department in 1925, although later inquiry showed a few cases came in in both 1923 and 1924. From 1926 on, the cases increased enormously up to and including 1928, when a reduction took place. The type was, in the main, benign tertian, although in 1927 the upper section of the county showed an almost exclusive malignant tertian. This lasted only during that year. The following year benign tertian invaded the section and since then no malignant tertian has been seen.

The following corrected table gives the cases reported for each year and their classification:

TABLE I.
Case Incidence Each Year

Year	Reported	Recurrent	New Local Infect.	Recurrent of Foreign Inf.	Recurrent of Local Inf.
1923	2	2	.....	2	....
1924	3	3	.....	3	....
1925	7	4	3	1	3
1926	27	20	7	20	....
1927	320	1	319	1	....
1928	935	216	719	122	94
1929	478	176	302	96	80
1930	378	166	212	89	77

TABLE II.
Infection Contracted Previous to Coming to Dona Ana County

Year Infected					
1925	1926	1927	1928	1929	Percentage of all infections
9	37	245	214	8	43.01

TABLE III.
Infection Contracted in Dona Ana County

Year Infected					
1925	1926	1927	1928	1929	Percentage of all infections
	12	233	400	32	56.84

A house to house survey begun in October 1928, and completed in August 1929, gives the potential carrier state for the period; classified as to year infected and the source of infection, a total of 1190 persons were found. This survey revealed other facts which are not made a part of this report.

These results, shown in Tables Nos. 1, 2 and 3, demand explanation to a certain extent. Although the method for obtaining the information is without fault, yet the information is quite unreliable in some respects. In explanation, it can be safely stated that, owing to the attitude of the persons of migratory tendencies in general and as a result of the campaign of eradication—in which it was stressed that the invasion of the disease was the result of the migration to this section of infected persons, whose personal hygenic practices were quite faulty and whose indifference toward preventable diseases is noteworthy—there was exhibited a tendency to claim that infection was encountered locally, when, as a matter of fact, a fair percentage of this class brought the infection with them. This is markedly shown for the year 1927, in Table I, where only one case of foreign origin is shown, when, as a matter of fact, the influx of carriers was quite heavy, as is to a considerable extent reflected in the year 1928, and to a lesser extent in both 1929 and 1930. There also was a notable lapse in the reporting of current cases; therefore, the table is far from being a true record of the total number of cases present at any particular time, and is of value only in showing the trend in the case incipience. We also assume that, owing to the campaign efforts, an increasingly larger proportion of cases were brought to our attention. If this be true, the true downward trend is actually more acute than it appears to be in Table I.

Both the influx and the exodus of people have, during certain seasons of the year, been enormous, depending upon the fluctuating demand for cotton-field workers, so the figures cannot be absolutely correct; yet, in spite of the migratory habits of this class, our fixed population has been considerably augmented since 1923, to the extent of 69+ per cent.

The survey further elicited the following facts: Sixty per cent were self-treated; 56 per cent males and 44 per cent females: 60 per cent white, 40 per cent Spanish-American and 1 per cent Negro.

These cases were housed in 613 domiciles, which are classified as 449 of adobe construction, 92 frame construction, 48 jacals and 24 tents. Of these there were completely screened, 310; partly screened, 83; inadequately screened, 141, and unscreened.

In a series of inquiries amongst drug sellers, it was found that the sale of "chill tonics" increased very materially up to and including 1928; that in 1929, quinine sales took a decided boost and "chill tonic" sales fell off; that in 1930 there was a marked reduction in the sales of both quinine and "chill tonics." If this factor can be used as an indication of the trend of the disease, it decidedly corresponds with the downward case incidence trend in Table No. 1.

A school survey was also made during the fall of 1928 and extended into the spring of 1929. This survey involved only (1) those children having a history of having had an attack of malaria, (2) those having one or more cases in the family, (3) those coming from a state or district where malaria is prevalent. Blood specimens were taken from those coming into any of the above categories. In all, 277 specimens were taken and of these 48 per cent were positive for malaria.

III. Larval and Adult Mosquito Incidence. As a check on the effectiveness of the anti-mosquito campaign, numerous observation posts were established. They were invariably located at the bridges crossing the drainage canals, where periodical searches are made of larvae and for adult mosquitoes. Additional posts for adult mosquito observations are in dwellings and barns in close proximity to drains. Observations for larvae are made at fourteen-day intervals, and those for adult mosquitoes at three to four-week intervals. Prior to 1928, only sporadic observations were made in selected places. In 1928 and since then, more systematic and extended observations became the rule; therefore, comparisons can be made only with that year, even though control measures were in operation and a constant reduction was noticeable toward the end of the summer months. There was a decided reduction from July on, for 1928, in adult mosquitoes at these selected resting places, and this has continued up to the present time. In

1930 these same places rarely harbored a mosquito. This also holds good in all the observation posts. Likewise, this same condition holds for the larval observations. We have, therefore, had an enormous reduction in the Anopheles mosquito population. A very close estimate of the extent of reduction for both larvae and mosquitoes would be 90 per cent. Tables of comparison involve many observation posts and are not included here for fear of elaborate detail.

Anopheles breeding begins rather early in the year, depending to some extent upon the severity or mildness of the weather. We have collected larvae as early as the 15th of February; and adult Anopheles have been encountered during the month of January in sheltered places.

The heaviest breeding months are June, July, August and September, which gives us an unusually long season of work. The extent of breeding has occasionally been augmented during our rainy season by torrential rains, producing large collections of water in low-lying lands, remaining for a sufficient length of time to afford excellent breeding places and harborage for larvae.

CONTROL MEASURES

Our first definite intimation that a malaria problem was imminent in this county, came in 1925. Upon request to the United States Public Health Service, experts were detailed to make a survey of the situation. During 1926, Dr. M. A. Barber, special expert, and Dr. T. B. Hayne, technical assistant, conducted a survey covering a period of two weeks. Again, in 1927, Dr. Barber returned, with Mr. King, technical assistant, for a like period. In 1928, Dr. Barber again returned with Mr. W. H. W. Komp, entomologist, and Mr. King, technical assistant, for a period of two and one-half months, in order to check the effectiveness of the control measures. Dr. Barber is the originator of the Paris green method of mosquito control and his recommendations have been strictly adhered to in our work.

In the fall of 1927, the first appropriation was made for the control work. An amount to cover labor, field equipment and supplies, of $2500, was appropriated. This same amount has been repeated each year since. It does not cover the total cost, since the personnel of the health department devotes considerable of its time to the work. It covers only the labor of the field crew, the cost of material and supplies used in the field.

1. Scope Operations. The operations extend from about 2 miles within the county of Sierra, south in this county to below Chamberino. The last ten miles were added to the territory in 1930, owing to the advent of a new breeding place for the maculipennis mosquito. This territory involves about 350 square miles, 124 miles of canal, consisting of 250 acres of water surface, besides numerous borrow pits and ponds. These latter increase in numbers and size as the irrigation season advances.

There were some notable high spots of infection, situated in those areas where the immigration is heaviest and where the migration is more or less constant. These spots are now quite level with the low trend, in both the number of cases and the breeding of mosquitoes.

2. Methods of Control of Breeding. The methods necessarily confine tthemselves to the use of larvacides and the top-minnow. The larvacides are Paris green in dry dust, used crankcase oil and kerosene mixture, to which Paris green is sometimes added, and Paris green in wet sand, depending upon the condition.

Gambusia Affinis and Gambusia Petruelis (top-minnows) are used to stock the drainage canals.

The working crew consists of a foreman and two laborers. The equipment consists of one Ford "pick-up" truck, with oil barrels and oil cans, metal knapsacks for mixing and carrying the Paris green mixture and heavy metal hand scoops for its distribution, and other small equipment.

The Paris green mixture is distributed by hand, using the wind direction as a help in its distribution. Blowers were tried but were found cumbersome and impracticable in the brush encountered on the canal banks.

An entire tour of the area is made every two weeks and all canals and water collections are treated. During the first year of operations, the work was begun on April first and extended to October first. At this time it was found that there were many adult mosquitoes in the air and the breeding of larvae had progressed considerably. Naturally, this gave the breeding a notable start and it was necessary to combat the breeding operations of a large number of early mosquitoes. In the following year, and since, operations are begun on March first in order to forestall the boost in breeding previously experienced. This has had a notable effect, since we immediately overcome the breeding activity effects of the mosquitoes which have been hibernating through the winter months.

To enable one to know at all times the extent of progress and the failures, if any, one must test for presence of larvae at stated

intervals and at numerous observation posts. This is done routinely by the foreman of the field crew, who has been instructed in the manner of doing it and in the recognition of the Anopheles larvae. These collections are brought to headquarters where they are classified, counted, and recorded against the post producing them. In this way an accurate check is kept of the progress being made and indicates quite correctly points missed in treatment or inadequately treated. The larval collections are bred out for specie determinations and for experimental research purposes. Re-checking is done by the health officer, and searches for and collection of adult mosquitoes are also made by him. Accurate records are also kept of these.

The effectiveness of top-minnows depends upon the extent of the horizontal vegetation in the body of the water. Where there is much of this, minnows have considerable limitation in their effectiveness, many larvae breeding out although the water may have an abundance of minnows. Where the vegetation is perpendicular they do very effective work. Since the canals contain both kinds of vegetation, we do get a fair percentage of effectiveness from having them.

Top-minnows increase in numbers very rapidly where planted, if sufficient protection is afforded the young. They are viviparous, and breed about every six weeks, beginning in the month of April, one female delivering from ten to eighty young each time. They are cannibalistic.

3. Cleaning of Drain Canals. Owing to the high cost of dredging these canals, which must be done with a drag-line dredge, doing so for the elimination of breeding places of Anopheles is impracticable. It is only done for the purpose of overcoming an impeded flow of the waters and for restoring full drainage effectiveness. It is planned to do this dredging at four-year periods. Even were it attempted for the elimination of Anopheles harborage, observation has shown that it is effective only for a sixty-day period at most, and the necessary method followed still leaves a fringe of vegetation on one border of the water, which provides excellent harborage for the maculipennis mosquito, and still calls for continuance of treatment. It does, though, affect the breeding of the pseudopunctipennis for a longer preiod of time, until center-stream vegetation again appears.

Various chemicals have been tried in an attempt to destroy the vegetation; but their practical applicability over a large area is still in the experimental stage.

4. Screening. Screening is the vogue. One is concerned mostly in urging the repair of damaged screens and the extension of the screening to those inadequately done. Barber and King give the following table in an article published in Public Health Reports of March, 1929, entitled "Some Notes on the Limitations of Screens in the Prevention of Malaria," which is the result of a survey made of a certain section of this county. He concludes that we enjoy a high percentage of completely screened houses.

TABLE IV.

Amount and Character of the Screens in a Sample Group of Houses in Dona Ana County, N. M.

Type of Screening	Number of Houses	Per cent of total Number
I. Veranda, doors and windows screened	97	13.0
II. Veranda not screened:		
1. Completely screened doors and windows to the top	430	57.6
2. Completely screened except upper half windows not screened	121	16.2
3. Lacking screened doors, windows wholly or partially screened	49	6.5
4. Only one room screened, presumably sleeping room	5	.7
III. Wholly unscreened	45	6.0
	747	100.0

Since the maculipennis mosquito is the greatest offender in this area and since it usually seeks for resting those places inhabited by man, house transmissions of the disease are common; therefore, all persons are personally instructed to search for and destroy all mosquitoes found in their homes.

Our difficulty has been in inducing people to properly utilize the screens that they are equipped with. Owing to the high atmospheric temperature prevalent here during the summer, the poorer class of persons are inclined to sit or sleep out of doors beginning at sunset, or to prop open their screen doors. It is difficult to persuade them to change theis habits and to impress them with the necessity for doing so.

5. Treatment with Quinine and Plasmochin. We are advocating the "standard treatment" adopted by the United States Public Health Service. Various other systems of quinine administration are in vogue and have their strong advocates; but the difficulty with all of them is that the patient does not keep it up long enough to insure a sterilization of the blood.

Plasmochin and plasmochin compound (with quinine) has proved a valuable substitute for those who are "quinine-intolerant," "quinine-resistant" or pregnant. This Department has used this synthetic preparation for the past three years for the purpose

of making observations on its effectiveness. The drug can now be purchased on the open market. Its efect on the patient is, occasionally, rather tricky, and therefore its administration must be carefully observed throughout its use. Its further use during the administration of quinine is for the purpose of rendering the malaria blood non-infective to mosquitoes, since a malaria infected blood can be infective to mosquitoes even though it be loaded with quinine. Barber, Komp and Newman, in a series of experiments, ("The Effect of Small Doses of Plasmochin on the Viability of Gametocytes of Malaria as Measured by Mosquito Infection Experiments," Public Health Reports, June 14, 1929), conducted two years ago in Central America, found that, if a small dose of plasmochin is administered to the quinine-treated person every third day, his blood becomes non-infective. The importance of this finding in both treatment and control work is plainly evident.

An important feature in our control work has been the discouragement of the use of the so-called "chill tonics". They contain only a small dose of quinine, not sufficient to produce sterilization excepting in the very young, but sufficient to hold in check the most disagreeable symptoms. The majority of the people infected are of the class who rather incline toward self-treatment, and who have been in the habit of using the so-called "chill tonics" for every conceivable ailment. It has been difficult to induce them to purchase quinine instead of the "tonics."

6. Education. The necessity for educating the people is paramount; should they remain indifferent, as most of them are inclined to be, the conditions would resemble those of the southern states, where malaria has been and is endemic. This apathy toward the disease is a great factor in its perpetuation. When a people reverts to tippling "chill tonic" to keep itself fairly comfortable and fails to concern itself with positive cure, or takes no means to prevent transmission, one can expect either an increase or, at best, a high level of incidence of malaria.

The greater portion of the educational work done now is by personal contact. During the inception of the campaign of eradication, use was made of press articles, talks before Farm Bureau locals, school classroom talks, the showing of films, the distribution of malaria literature, personal contacts with physicians during which, also, prompt reporting of cases was urged. At home visits a mimeographed sheet of instruction as to treatment and an explanation of the cause and the method of prevention, is left with the householder.

It is also urged that a blood examination be obtained and that this be repeated after finishing a full course of quinine treatment. In this respect this department has examined about 4500 specimens since the beginning of the active campaign, either for verification of diagnosis or for differential diagnosis.

CONCLUSION

Malaria is endemic in Dona Ana County, New Mexico. Under the physical conditions present, the effectiveness of control measures depends upon the use of a combination of methods, which was determined upon by exhaustive surveys, experiments and observations.

The use of a combination of methods, such as dust diluted Paris green, oil mixtures, oil and Paris green mixtures, Paris green and wet sand mixtures, the propagation and distribution of top-minnows, the instruction of the inhabitants in the habits of the offending species of mosquitoes and the necessity for proper and adequate treatment, and the advisability of blood examinations, has resulted to a comparatively high degree in reducting the Anopheles mosquito production, the number of local transmissions and the total number of cases of malaria.

The actual reduction in transmissions is far greater than is shown by the figures presented, if we consider the probability rate, including the fixed increase in population, had no control measures been instituted.

It is expected that the migration of carriers will continue and that it is impossible completely to eradicate the Anopheles mosquito or to eliminate the ideal breeding conditions until some feasible and economical method of the destruction of the aquatic vegetation is discovered, and that, in consequence, the control measures must needs be continued indefinitely.

The control costs are extremely low considering the large area under treatment.

MASTOIDITIS
(Case Report with Discussions.)

W. A. Schwartz, M.D.
Phoenix, Arizona.

(Presented at Staff Meeting of Good Samaritan Hospital, Phoenix, April 29, 1931.)

Boy, age 10, admitted to the hospital on February 5, 1931. A week before entering the hospital was hit on the end of the nose and on the upper lip by a hard piece of dirt thrown by another boy. Both the nose and upper lip were swollen. The swelling increased until both nostrils were completely closed with an elevation of temperature, pain and headache.

Past History: Mumps at five years. Measles at six years. For years while in the East had frequent colds during the winter, continuous nasal drainage and coughs.

Examination: Pulse 112. Temperature 101.2 degrees. Leukocytosis, 16,000; 76 polymorphonuclear. Swelling of the upper lip and entire nose, especially the tip. The septum was bulging on either side closing the nostrils completely.

The septum was incised under local anesthesia and about an ounce of pus escaped. The abscess drained for about eight days. During this time the swelling had gradually subsided, the temperature ranging from 99 to 101 degrees. Dr. Kennedy reported an infection in the chest which might be responsible for the fever.

Five days after entering the hospital, the temperature was 102.6, and he complained of pain in the left ear. Examination showed both canals filled with large masses of hard cerumen, and attempt at removal of these masses was not successful. The following day after long manipulation and washing, the cerumen was finally gotten out. A small abount of blood showed in the left ear coming from the canal wall. The drum was congested and bulging. A small incision was made in the drum. The following day there was a large amount of sero-sanguinous drainage. That day the temperature was 103. From this time the temperature gradually subsided, and he left the hospital on the 18th. He still had very profuse drainage from the left ear. No tenderness or swelling over the mastoid. No pain.

Again admitted to the hospital February 26, 1931, on the recommendation of Dr. Kennedy. Temperature 101.2. Pulse 104. Respiration 24. Leukocytosis 22,800. Complained of continuous dull pain in left ear. The pain was not severe. There were no chills. No vomiting. Profuse drainage from the left ear. Sagging of the posterior canal wall. Swelling over the entire mastoid area extending back of the mastoid and down the neck. Tenderness over the entire area. More marked over the antra and tip.

X-ray examination showed on the right side eburnation around the region of the antrum and cell development being more nearly normal in the posterior portion of the process. On the left side there is no normal cell structure visible but the density is not so great as it is on the right side. General examination was essentially negative. The reflexes were slightly exaggerated. Otherwise there were no neurological findings.

A consultation was requested, and the patient was seen by Dr. McLoone and Dr. Bailey. Both recommended that the boy be operated immediately.

Operation showed much sclerosis. Pus was found under pressure. The trabeculae had broken down, and inflammatory tissue present. He continued to have intermitten temperature ranging from normal to 101 until March 7th.

The drainage gradually subsided. The hearing at this time is normal. No drainage from the middle ear. No perforation.

COMMENT

Although this is an acute infection of the mastoid, the sclerosis shows that there has been an inflammation at some previous time. Some congestion of the mastoid is probably present in every case of otitis media. Middle ear infections are common while a small percentage develop symptoms that can be recognized as mastoiditis. The symptoms of mastoiditis in this case were definite. Often they are not so definite, and an operation may be delayed too long. The abscess of the septum was direct result of the trauma. Probably a hemorrhage beneath the membrane followed by an infection. Meningitis is a possible complication in abscess of the septum.

By Dr. John J. McLoone, Phoenix.

I saw this patient in consultation on the 28th day of February, 1931. My observations at that time were as follows:

Left ear canal was filled with pus. After removal of same, a small perforation was disclosed through which came some pulsating discharge. Mastoid process was equisitely tender, especially over the antrum and the tip. Pain became more intense as pressure was made over the posterior portion of mastoid. Palpation revealed a marked periostitis over the entire mastoid area. Considerable edema of the structures posterior to the process was found. This edema extended downward towards the neck area. There was a sagging of the posterior wall. There was, at that time, manifestly present quite an extensive involvement of the mastoid bone. I advised immediate surgical intervention, as I felt grave sequelae might follow if operation were too long delayed.

In reviewing this case and noting some of the earlier history, we note that there was a mucopurulent discharge from both nostrils with a temperature of 101.4 and a white count of 22,800, polys 76. Patient was coughing on admission to hospital. The temperature continued above normal. On the 10th, 11th and 12th of February, which would be the 6th, 7th and 8th days in the hospital, temperature is noted as 102 or above. On the 13th, an x-ray was taken of the chest suggesting a resolving pneumonic process of the lung. A serosanguineous discharge appeared, coming from the left ear on the 12th and by the 15th had become quite profuse. Etiological factors in this case were undoubtedly either a nasal infection or pneumonic process or possibly both. A culture taken at this time would have, in all probability, revealed a streptococcus, a pneumococcus or perhaps the presence of both of these organisms.

The bacteriological findings of purulent inflammation of the middle ear with mastoid involvement are most important in deciding whether it will be necessary to open the mastoid cells. The streptococcus, especially when occurring in influenza cases, is most insidious. When a hemolytic streptococcus infection of the mastoid cells is demonstrated, no prolonged abortive treatment should be maintained. The finding of this organism in the middle ear discharge, together with a daily rise in temperature which does not subside after a very short time, is sufficient indication to perform the simple mastoid operation. I have operated in cases of this type in which there was practically no pain and very little tenderness, and found the destruction of the mastoid cells altogether out of proportion to the symptoms present. The pneumococcus, especially when accompanied by the micrococcus catarrhalis, will in most cases result in a well defined mastoiditis. The staphylococcus produces a milder infection. However, it frequently happens, especially after the otitis media is well established, that we are unable to demonstrate the true offending organism. Staphylococcus alone may show in the aural discharge, while the more virulent organisms as the streptococcus or pneumococcus, remain in the mastoid antrum or cells.

A sparsely cellular type of mastoid as revealed by the x-ray does, I believe, explain a lack of expression of external symptomatology earlier in the disease. In studying the x-ray appearances of mastoids, we find that various films may show every possible gradation, ranging from the completely acellular mastoid to the most widespread pneumatization. The mastoid with few or no pneumatic cells represents the greatest contrast to the pneumatic type.

In this case, a very destructive process had evidently been going on without manifesting itself externally earlier in the disease on account of a sclerotic and dense mastoid bone.

These types are termed diploetic, infantile, and acellular or sclerosed mastoids, or those with a total arrest of pneumatization. Hence the importance of pre-operatively determining the mastoid structure. The otologist should, by x-ray, be able to visualize the anatomic relations fully. He will know that the structure of such a mastoid consists of an antrum deeply placed in dense bone; that there may be only a very thin plate of bone between antrum and either the middle or posterior fossa or the sinus, or all three combined. A most virulent infection in an antrum so situated is capable of producing but few if any of the typical signs and symptoms of mastoiditis, though all the more likely to give rise to intracranial complications. An operation in this class of mastoid will be indicated on far less clinical evidence than in the pneumatized type of mastoid.

This is in contrast to a distinctly cellular mastoid, in which external signs, such as edema and postauricular tenderness, manifest themselves early. The operative findings in this case disclosed that neither dura nor sinus were exposed, which would indicate that surgery was undertaken at an opportune time.

NEPHRECTOMY FOR TUBERCULOSIS OF KIDNEY. (Case Report.)

Charles N. Ploussard, M.D., F.A.C.S.
Phoenix, Ariz.

(Discussed before Staff Meeting of Good Samaritan Hospital, May 25, 1931).

White female, age 30, entered hospital to improve physical condition for nephrectomy, a diagnosis of kidney tumor having been made by me previous to her admission.

Past history: ordinary diseases of childhood. Typhoid at age of 14. Married at age of 14. Marriage later annulled. Gonorrheal and syphilitic infection shortly after marriage; extensive treatment. Became pregnant and had a cesarean section during first year of married life. Supravaginal hysterectomy nine years ago. Tonsillectomy three times. Flu in 1928; several times since. Was at the Mayo Clinic in 1928, diagnosis gastroptosis and neurasthenia. At Johns Hopkins in 1929, diagnosis gastric stasis, spastic colon, hypotension, oral sepsis, undernutrition, pharyngitis, secondary anemia, spinal scoliosis and an affective nervous disorder with depression, fears, nervousness, irritability, headaches and abnormal sensations in the abdomen. At Touro Infirmary in New Orleans for eight months, diagnosis of secondary aremia, chronic focal infection. Was sent to Arizona for a change of climate in a very poor condition.

Physical examination: Patient is very anemic, very thin, high strung, adult white female, complaining of shortness of breath, vomiting large amounts of food, temperature ranges from 99 to 103 daily. Heart negative, x-ray shows old healed tuberculosis. Abdomen, tenderness throughout. Mass size of grapefruit in lower left kidney region. Tenderness over gall bladder area. Old scar between symphasis and umbilicus from previous operation. Extremities negative; reflexes normal.

Laboratory: Blood and spinal fluid Wassermanns negative. Test for typhoid and malta fever negative. Sinuses negative. Red count 3,000,000; white count 10,750; polys 85; monos 15; coagulation time 4 minutes and 30 seconds. Blood typing group 4. Urine; bladder specimen, albumin positive, pus and blood present. Right ureteral specimen, no pus, no bacteria. Left ureteral specimen, pus, blood but no bacteria found. Phthalein test, right appeared in three minutes; 40 per cent first hour. Left, appeared in eight minutes, 3 per cent first hour. Ewald test meal, free HCl 26; total acidity 56; trace of occult blood. N.P.N. 23 mgm. per 100 c.c. of blood. Icteric index 3.

X-ray: G.I.G.B. Chronic gall bladder disease. Barium enema at junction of sigmoid and descending colon an area of irregular contour and intolerance to contents apparently due more to pressure from without than to lesions of colon wall. Pyelogram: 60 c.c. sodium iodide in left kidney; left kidney shadow large. Kidney pelvis elongated, narrow and lower calyces not filled. Diffuse narrowing of upper one-third of ureter, probable new growth of kidney.

Operation Aug. 20, under sodium amytal-ether anesthesia, patient receiving about ten grains of sodium amytal before going to sleep. Incision about eight inches long extending from posterior to twelfth rib obliquely down over kidney area to mid clavicular line at about level of umbilicus. Kidney exposed, delivered with difficulty due to adhesions around kidney, particularly around lower pole. As much of the peri-renal fat was removed with kidney as was possible. Vessels doubly ligated, all bleeding controlled, kidney was removed. It was necessary to leave a small area of induration behind due to the fact that lower pole of kidney was densely adherent to posterior abdominal wall and probably to some abdominal viscera, most likely descending colon. This kidney tumor has appearance macroscopically of hypernephroma. Cigarette drain lower part of wound. Wound closed in layers. Patient given 500 c.c. citrated blood in operating room. Also 1000 c.c. normal saline into breast. Condition after operation poor. Convalescence very stormy and recovery was doubtful for three days after operation when she began to improve and was removed to her home in an ambulance 20 days after operation. Wound healed in three weeks. Patients convalescence was very slow but gradual.

Pathological Report: Kidney, gross section shows a fairly well defined rounded mass 1½ by 2 inches in diameter in the lower pole of the kidney replacing the lower calyces and encroaching upon the cortex. The cut surface is slightly granular with grayish yellowish nodules. Sections show inflammatory process with infiltration into the cortex and extending to and involving the capsule. Numerous rounded areas show central caseation necrosis and slight fibrous deposit at the margin and with occasional giant cell form. We would consider the changes as representing tuberculous involvement.

At time of admittance to Hospital she weighed 64 pounds. Stated she weighed less than that a few weeks previous. When in my office a few weeks ago she weighed 116 pounds. Her maximum weight was 126 pounds. She returned to her home in Georgia and writes that she was feeling fairly well and continues to improve slowly.

CORNEAL ULCER
(Case Report with Discussions.)

MAYO ROBB, M.D.,
Phoenix, Arizona

(Presented to Staff Meeting of Good Samaritan Hospital, April 29, 1931.)

This patient, a male, age 23, from Williams, Arizona, referred by Dr. McIntyre, having a foreign body strike his right eye while riding in an automobile. Two days later he had the sensation of a foreign body in the eye and several of his friends attempted to remove the foreign body from the eye but with no success. Then he consulted his local physician who was unable to find a foreign body.

When I examined the right eye a foul ulcer about the size of a match head was on the cornea just below the summit, marked ciliary injection, cloudy cornea and swelling of the upper lid. I advised hospitalization but he refused. He was prescribed butyn for the pain locally, two per cent atropine sulphate, cauterization of the ulcer with iodine petrogen, an eye wash, hot compresses, ten per cent neosilvol, a bandage, and aspirin internally. The ulcer became much worse and he was sent to Good Samaritan Hospital, March 20, 1930. Here he was put to bed and Dr. Bailey saw the patient in consultation. Locally he was given butyn, one per cent, mercurochome two per cent, atrophine sulphate, boric acid wash, the infra red light, and morphine hypodermically for the pain. The ulcer spread to the temporal side in spite of the treatment and three days later he was given six c.c. of milk in the gluteal muscle. The eye seemed silghtly better the next day. He was given the second dose of nine c.c. two days later, but there was no change in the eye.

The present antiseptics that were used in the eye were discontinued, and cauterization of the spreading ulcer with two and one-half per cent iodine, and conjunctival sac filled with calomel powder. This was done daily for a few days with no improvement. Ten days after entering, the ulcer had spread over about one-third of the surface of the cornea. The ulcer was now cauterized with the actual cautery under cocaine hydrochloride anesthesia which gave the patient slight relief and stopped the spreading of the ulcer on the nasal side. Dr. Gram saw the patient and advised five per cent dionin to be used locally which was done and another cauterization with the electric cautery over the upper and lateral side of the ulcer. After the second cauterization the ulcer ceased spreading and the eye began to improve. No hypopyon was present at any time.

He left the hospital on April 14, 1930 and the dionin was prescribed t.i.d. Three weeks later he came to the office and at that time the scar was much thinner and the vision in the eye was 20/40-3.

COMMENT

The cornea, like the rest of the surface of the body, is exposed to external injuries. It has a most delicate epithelium which is quite soft and, being seated on the smooth Bowman's membrane, is easily stripped off. So epithelial lesions of the cornea are quite frequent. Trauma may be responsible for many different kinds of corneal ulcers but I am dicussing only the so-called simple traumatic ulcer. Ulcers of the cornea are among the most frequent affections of the eyes and special significance is attached to them because the opacities that they leave often impair the vision. They are found much oftener in adults and especially in elderly people. In the later years of life the cornea is not so well nourished and is more liable to disintegrate than in youth. Traumatic ulcers may originate in a superficial defect caused by a wound, abrasion, burn or chemical corrosion, or the extrusion of a foreign body. They may also be caused by the cumulative effect of repeated slight irritations, for example, those due to ingrowing lashes. As a rule the body that causes cornea is caused by the bacteria present in the conjuntival sac, the most common organisms being the pneumococcus which is the cause of ulcus serpens,streptococci, staphylococci, Koch-Weeks bacillus and Morax-Exenfeld.

As a rule most traumatic ulcers run a benign course but a few are very serious. If the stage of infiltration fails to terminate in absorption and there is destruction of the overlying corneal tissue an ulcer results. Surrounding the area of necrotic tissue is a clear space and beyond this is a ring of infiltrating leukocytes which come from the vessels at the edge of the cornea. In favorable cases this necrotic tissue is thrown off, the surrounding cornea clears, the ulcer is covered by proliferation of the epithelium and the loss of substance is replaced by connective tissue derived from the fixed cells of the cornea. When the process is progressive it may spread over a large surface of the cornea or penetrate the deep layers of the cornea or both. If the ulceration is not checked the cornea is perforated and inclusion of the iris may result in staphyloma. If the iris does not prolapse the perforation may be closed with a tissue produced by proliferation of the posterior lining endothelium. Bowman's and Descemet's membranes are never reproduced. Panophthalmitis is often the end result of a very foul ulcer.

In view of the very varying course run by traumatic ulcers of the cornea, the physician who is called to a patient with this disease should be able to predict to the patient or his family to what extent the sight will suffer permanent impairment, in order that such impairment may not be afterwards charged against the treatment prescribed. The prognosis for vision depends upon the extent and location of the opacity which is the result of the ulcer.

Traumatic ulcers of the cornea, like most other diseases of the human race, do not yield to a set rule of treatment but certain principles are common to all. In a majority of ulcers the removal of any foreign body, atropin, boric acid wash, mercurochrome and dark glasses usually are sufficient to accomplish a cure. If the ulcer is foul or progressive, more energetic measures must be

employed. The remedies that are found to be very useful include holocane (one per cent) for the pain, iodine of petrogen (5 per cent) applied directly to the ulcer, boric acid wash, moist hot compresses, and a protective dressing to the eye. When a conjunctivitis is associated with the corneal ulceration the lids are brushed daily with a one per cent silver nitrate solution followed by a saline solution. Some patients obtain more relief from the infrared light than moist heat. In many ulcers dionin (2 to 10 per cent) gives excellent results; also iodoform is a useful drug in this disease. If the pneumococcus is the cause of the ulcer ethylhydrocuprein has been reported by some ophthalmologists to give brilliant results. I have always found it a disappointment. It must be a freshly prepared solution and this may account for its many failures. Text books on ophthalmology all mention the use of eserine instead of atropin for peripheral ulcers, but I have yet to see any physician use this drug for corneal ulceration. Foreign protein given intravenously or subcutaneously seems to have a favorable effect on many ulcers. The remedies utilized are boiled milk 1 to 5 c.c. subcutaneously given daily for three days. Anti-diphtheritic serum and typhoid vaccine are also used, as well as many other proteins. No one seems to have any advantage over the others. If all this medicinal treatment fails and the ulcer still spreads, cauterization with the thermophore, phenol and alcohol or the actual cautery is usually resorted to. Of all the agents used in foul corneal ulcers sterilization of the floor and edges of the ulcer with the actual cautery gives the most satisfactory results. This usually stops the spread of the ulcer and this relieves the pain. If a hypopyon is present a paracentesis of the cornea may be performed. It will also cause the ulcer to cease spreading. Any focal infection should be taken care of, for example, infected teeth, tonsils, nasal sinuses and gall bladder, as they often retard the healing of the ulcer.

The diet should be nutritious and plenty of fresh air supplied. Codein or morphine may be given for the severe pain. The bowels should be watched carefully. Calomel and salines are given whenever necessary. The circulation must be taken care of, especially in elderly people.

Discussion by Dr. Harley Yandell, Phoenix.

This fellow from Williams must have had a pretty tough time of it, as well as Dr.Robb and his associates, but this is a thing that so often happens. Somebody gets something in his eye, and waits two or three days and then has the neighbors try to get it out; if they fail, as they usually do, the family doctor is called upon. He usually finds that, if the neighbors did not get the foreign body out, they at least did a good job of infecting the eye, and so he "passes the buck" to the eye specialist; this is, of course, to be highly commended, because, the Lord knows we who study the eye a life-time, know little enough about it.

Dr. Robb told us how hetook care of this particular sort of an ulcer, and the end results in the case were, in all probability, all that could be expected in such a desperate condition.

I feel that I would almost be considered guilty of sacrilege, should I try to rehash in this discussion what Dr. Robb had to say about the histology of the cornea, the pathological conditions and the detailed technic in handling a traumatic corneal ulcer, but I hasten to offer just a few remarks which must be considered friendly, or as constructive criticism, or possibly a still better term would be just some suggestions. It seems that, in this case, you were dealing with a pneumococcus infection, and if this were true, you should have lost no time by instilling butyn, neo-silvol and mercurochrome which are highly incompatible chemically, but should in my opinion, have resorted immediately to the actual cautery, using some anesthetic other than cocain, which often does actual harm to cornea with ulcer.

I was asked to discuss traumatic corneal ulcers, and was also instructed to make an attempt to help the general physician who treats ulcers of the cornea, or as has been termed—"sores on the eye ball." As regards the latter, I fear I have been given a difficult task; however, I would like to be able to enlighten any one who undertakes to cure a corneal ulcer, a condition which may readily cause blindness, a condition which therefore must truly be placed in the category where all things are considered from an economical standpoint. The world is in darkness to thousands caused by corneal infection.

Due to the suddenness of its onset, the rapidity of its ravages destroying the vision, happiness, and hope, or seriously crippling the wage-earner and bread-winner of the home, I say "hands off" unless you are familiar with the many things that may happen to an eye which has a corneal ulcer. I would in all kindness, say to the general physician: "Would you assume the responsibility of treating a corneal ulcer in your own child's eye, or would you quickly refer same to the specialist? Will you go ahead and treat a corneal ulcer in any one, and consequently be in doubt as to its progress, until finally you see there is no chance, and then kindly refer the case to the eye specialist?"

Happier would I be tonight as I stand here before you during the few minutes allowed me, if I could tell you all how to cure corneal ulcers, but I fear that should I talk to you until 3 a.m. and as fast as Will Rogers chews gum, that it would all be in vain, and you would be about where the sailor was as he just crossed the bay, with the mountainous waves rolling and tossing before him. However, since I have been selected as the one to offer to the general physician this friendly advice tonight, I am going to give you a technic which, if you will always follow as long as you practice medicine, you will have me to thank, for you will get more real personal happiness, will cure more corneal ulcers and your patients will always be grateful to you for your manly act.

Technic: When you find out, or possibly a little while before you find out, that your patient has a corneal ulcer, kindly refer him to the ophthalmologist who has most likely spent as much time in studying corneal ulcers as you have in studying about everything, even golf and contract bridge.

A CASE OF PROSTATE OBSTRUCTION

DAVID M. DAVIS, M.D.,
Phoenix, Ariz.

(Presented at Staff Meeting of Good Samaritan Hospital, May 25, 1931.)

The case I wish to report is that of Mr. J. W. G., age 68, who was first seen on February 5, 1931. His health had been good until the onset of symptoms of urinary obstruction three or four years previously. These symptoms of frequency and difficulty increased until one year previous, at which time there was an attack of complete retention. He was catheterized several times and was quite ill for two or three weeks but finally urination was reestablished. He continued to void frequently and with difficulty until about a week previous to admission, when there was another attack with complete retention. He was catheterized several times and was then seen by Dr. Tucker, who inserted a retention catheter which functioned well.

Examination on Febrduary 5 showed the prostate only moderately enlarged. The lobes were symmetrical, smooth and elastic although firmer than normal. The patient was comfortable, but had lost weight, looked drawn and anxious, and was restless, depressed, and querulous. At this time the urine showed a moderate infection and a phenolusphonphthalein test showed no excretion in the first half-hour and only 5 per cent in the second half-hour. At his request the catheter was removed but he was unable to void and it had to be replaced.

Cystoscopic examination showed a bladder capacity of 350 c. c. with marked trabeculation and a moderate hypertrophy of the trigone. Study of the vesical orifice showed three clefts, and a picture indicating good sized lateral enlargements projecting intravesically, and a moderate sized median lobe. At this time the patient's condition appeared reasonably satisfactory in all respects except for the very poor excretion of phenolsulphonphthalein. This, however, contraindicated operation and the catheter drainage was continued. Slow improvement occurred. On Feb. 23 a blood N.P.N. was made, showing a normal figure of 30. It is unfortunate that other determinations had not been made previously but the number of tests was held down by economic considerations, and I considered the phenolsulphonphthalein test more important. The lantern slides show there was a gradual improvement in the phenolsulphonphthalein excretion; it was hoped that 40 per cent in the first half-hour could be reached, but it became evident on March 11 that 30 per cent in the first half-hour was the maximum obtainable.

At this time the condition of the patient had undergone a marked change and it was now easy to see in retrospect how much better he was than at the time of admission, even though his condition then appeared to be reasonably good. He had actually gained a little weight, and instead of being depressed and irritable, was now calm, confident, and cooperative. His appetite was excellent and his digestion and bowel action normal.

Perineal prostatectomy was performed under caudal anesthesia, March 16. The postoperative course was rapid and uneventful. He voided through the urethra 60 hours after the operation. On the third day he had complete control of his urine. He was out of bed on the fourth day and began to walk on the eighth day. The perineal fistula closed on the tenth day and on the twelfth day he left the hospital feeling very well.

He was seen again six weeks after the operation at which time the bladder capacity was 500 c.c. and the urinary function normal in all particulars. In addition his sexual powers were unimpaired.

COMMENTS

To have operated upon this patient at the time of admission to the hospital would have led almost surely to disaster. The non-protein nitrogen of the blood is not a safe index as it returns very rapidly to normal upon the institution of artificial drainage and long before the kidneys have fully recovered from the damage caused by obstruction and infection. The phenolsulphonphthalein is a more valuable index and in my opinion the best. The excretion should be studied in half-hour periods as the rate and rapidity of excretion are of great significance and more important than the total figures for two hours. If the figure for the first half-hour can be brought to normal, we know that the dye is not only being put out in the proper concentration but that there is no delay in its first appearance in the urine. The time of operation is determined not by the attainment of any specific figure but by the reaching of a constant and stable rate of excretion. Reference to the curve shows that this constant level was reached at 30 per cent in the first half-hour in this case and the postoperative history shows that the time was properly selected and that the weeks spent in preliminary drainage were well worth while.

Another point of importance is that this patient should have received surgical treatment at the time of his first complete retention. He would then have been spared the extensive damage to his kidneys which resulted from an additional year of chronic obstruction and a second attack of complete retention.

CASE REPORT (Toxic Goiter)

LESLIE R. KOBER, M.D.,
Phoenix, Arizona

(Discussed at Staff Meeting of Good Samaritan Hospital, June 22, 1931.)

A woman aged 50, complaining of nervousness, "heart trouble," gastro-intestinal disturbances, and muscular weakness, said she had noticed an enlargement of the neck since puberty and believed her nervousness, palpitation, tachycardia, and flatulence had gradually increased since that time, but more markedly in the past year. The past history was negative except for frequent attacks of cystitis. She had had no operations. She had borne three children, but was now a widow for ten years, and had reached the menopause three years ago. Her father died from a paralytic stroke, her mother died in an accident, one brother and three sisters are living and well but one sister likewise has an enlargement of the thyroid gland. There was no history of tuberculosis or cancer in the family.

Physical examination revealed an elderly white female appearing to be more nearly 60 than 50 years old, very nervous and apparently somewhat edematous, with a pulse rate of 140. The eyes showed no exophthalmus, the pupils were moderately dilated but reacted to light and accommodation. There was possibly a slight lid lag. The tongue was tremulous. The neck showed an enlargement of

the thyroid gland, more marked in the right lobe, with no bruit audible. The chest was symmetrical. The breasts were atrophic. Eighteen centimeters of the 26.5 cm. chest breadth were occupied by the cardiac dullness which showed likewise enlargement to the left. The blood pressure was 170 systolic and 80 diastolic, with a rather irregular, rapid heart rate, and a systolic murmur. The lungs showed fibrotic changes under the fluoroscope, but were negative to percussion and auscultation. The liver was enlarged two finger breadths below the costal margin. Pelvic examination was not done. There was a marked tremor of the outstretched hands and the knee jerks were accentuated.

A diagnosis of toxic goiter, cardiac decompensation with moderate anasarca, was made and the patient sent home to be on Lugol's solution and bromides and digitalis for two weeks with the understanding that she was to enter the hospital for operation after that time. On her entrance to the hospital on May 11 her B.M.R. showed plus 37. On the 12th a subtotal thyroidectomy was performed with very little difficulty and the patient was in fair condition post-operatively. The following day the temperature rose to 106 degrees with a pulse of 160 and the patient died at 5:30 p. m. with terminal pulmonary edema and cardiac dilation.

DISCUSSION

This case brought to mind that during my schooling at Northwestern and during my interneship at the Wesley Memorial Hospital in Chicago, where a great many thyroids are seen and handled surgically, I could recall only one case which met with fatality following thyroidectomy, and was rather surprised to hear that very few severely toxic cases had been handled successfully here in Phoenix.

An examination of the records of this hospital for the past two years revealed that out of twenty-one cases listed as being toxic thyroids and having thyroidectomies performed only fourteen gave definite proof on the charts that they were really toxic. Six of these fourteen I considered from an examination of the charts as early or mild cases leaving only eight cases of truly severe thyrotoxicosis. Five of these eight died following thyroidectomy and only three were sent home as improved. One of these three had had a previous polar ligation, and the two lobes removed at separate operations, thus requiring a three stage operation to effect relief.

On studying these charts it seemed to me that the chief reason for such a high mortality, other than the fact that the cases were far advanced with cardiac damage, was the lack of proper pre- and post-operative preparation and care. The actual surgical removal which I have seen done could not be blamed.

At the Wesley Hospital these patients were put to bed on admission, given a high caloric diet, denied all but a very limited visit with relatives and following a preliminary B.M.R. and possibly a few days of preliminary rest they were put on ten or fifteen minims of Lugol's solution three times daily, with (in severe cases) frequent B.M.R. determinations especially after four or five days had elapsed. It had been previously determined by experiment that usually after ten to fourteen days on Lugol's solution the B.M.R. was at its lowest and the patient was in the best condition for operation. If the patient seemed to be in fairly good condition, or showed considerable improvement after ten days on Lugol's solution, with a reduction in B.M.R. he was operated at this time. If after 12 to 14 days the B.M.R. commenced an upward trend usually the most favorable time had been passed and the sooner he was operated the better. No particular precautions were taken, as does Crile, to put the patient to sleep on several successive days or in the room preliminary to operation, but they were sent to surgery with a preliminary narcotic and operated under local and nitrous oxide anesthesia. During the operation the surgeon would frequently ask the anesthetist to allow the patient to arouse enough to make certain that the nerves had not been touched, but only in the one fatal case that I saw was it necessary to remove the patient from the operating room before the operation was completed. Post-operatively large doses of Lugol's solution (120 minims or more in the first twenty-four hours) were given in the proctoclysis, hypodermoclysis, and by mouth, maintaining the dosage as long as the patient showed any toxic reaction and gradually reducing to ten or fifteen minims or removing it entirely, as the patient improved. Digitalis was rarely used if at all.

Discussion by Dr. Guy French (Coughlin Management)

Cases of thyrotoxicosis come to Dr. Coughlin referred by internists. They have, as a rule, been through a regime of treatment in an endeavor to better prepare them for operation. This treatment has been more or less standardized. A number of these cases respond beautifully to treatment and do not offer the operative hazard that the group does in which malnourishment, extreme nervousness and other complications, such as cardiac, persist. In this latter group surgery cannot expect to relieve the patient of damage which has been done to various systems, however the process may be curbed by removal of the source of toxemia.

When such a case comes to surgical service, history and physical examination and laboratory work have usually been done. The patient is placed in bed in a quiet room, visitors are prohibited except for members of immediate family and then for only a short period. Fluids are forced, high caloric diet given, sedatives administered, and of course iodine, if indicated. After observing the patient under this regime for a short time (usually a day or two) the patient may be given an HMC, the pulse, respiration, and nervous reaction are observed. If it is learned that the patient becomes quiet under such

dose, operation is scheduled for next a. m. The procedure may or may not be disclosed to the individual, depending upon the type. One drachm of Lugol's solution in three pints of water is given night before operation, patient is made to sleep. HMC No. 2 is given one hour before operation, and if deemed necessary, repeated just before patient goes to operating room. It is quite necessary that the removal to operating room be done qquietly, that operating room be ready, and that there is absolute quietude therein. A nurse stands at head of table to reassure the patient. One per cent novocaine is used as anesthetic. Operation is done carefully in order not to excite the patient. Should the patient become excited or dangerously weak during the operation, it may cease with the removal of only one lobe, or both may be removed and clamps left intact, no ligation.

In a great many of the most toxic cases the wound is left open and packed with acriflavine gauze. This gauze is kept saturated.

Patient is returned to room. Temperature is taken rectally every half hour, and if it should suddenly rise to 102 or above, it is reduced with ice applied to the body. Glucose is given intravenously and Lugol's in water forced by mouth unless morphine has caused nausea. If such is the case the desired amount may be given by hypodermoclysis one-half of one per cent in normal saline. Acriflavine pack is removed on second or third day. Novocain is injected into skin and muscles and wound closed inserting small rubber dam drain to prevent serum drainage. After two or three days drain is removed and on fifth or sixth day skin sutures are removed. Patient is kept in bed in a quiet atmosphere and as soon as advisable a H.M.R. taken. During the post-operative period thus far an internist has been in attendance as consultant. However, after the wound is healed, the patient is referred back to internist for the necessary treatment.

THE PURPOSES, PLANS, AND OBJECTIVE OF THE COMMITTEE ON THE TREATMENT OF FRACTURES OF THE AMERICAN COLLEGE OF SURGEONS

C. E. YOUNT, M.D., F.A.C.S.
Prescott, Arizona.

Gentlemen, you have been good enough to accept appointment on the Northern Arizona Sub-committee on the Treatment of Fractures. On this, the occasion of our first meeting, it is expedient that we should become acquainted with our duties and oriented in relation to the Regional Committee of Arizona, Dr. E. Payne Palmer, Chairman, and the Committee on the Treatment of Fractures of the American College of Surgeons, Dr. Charles L. Scudder, Chairman.

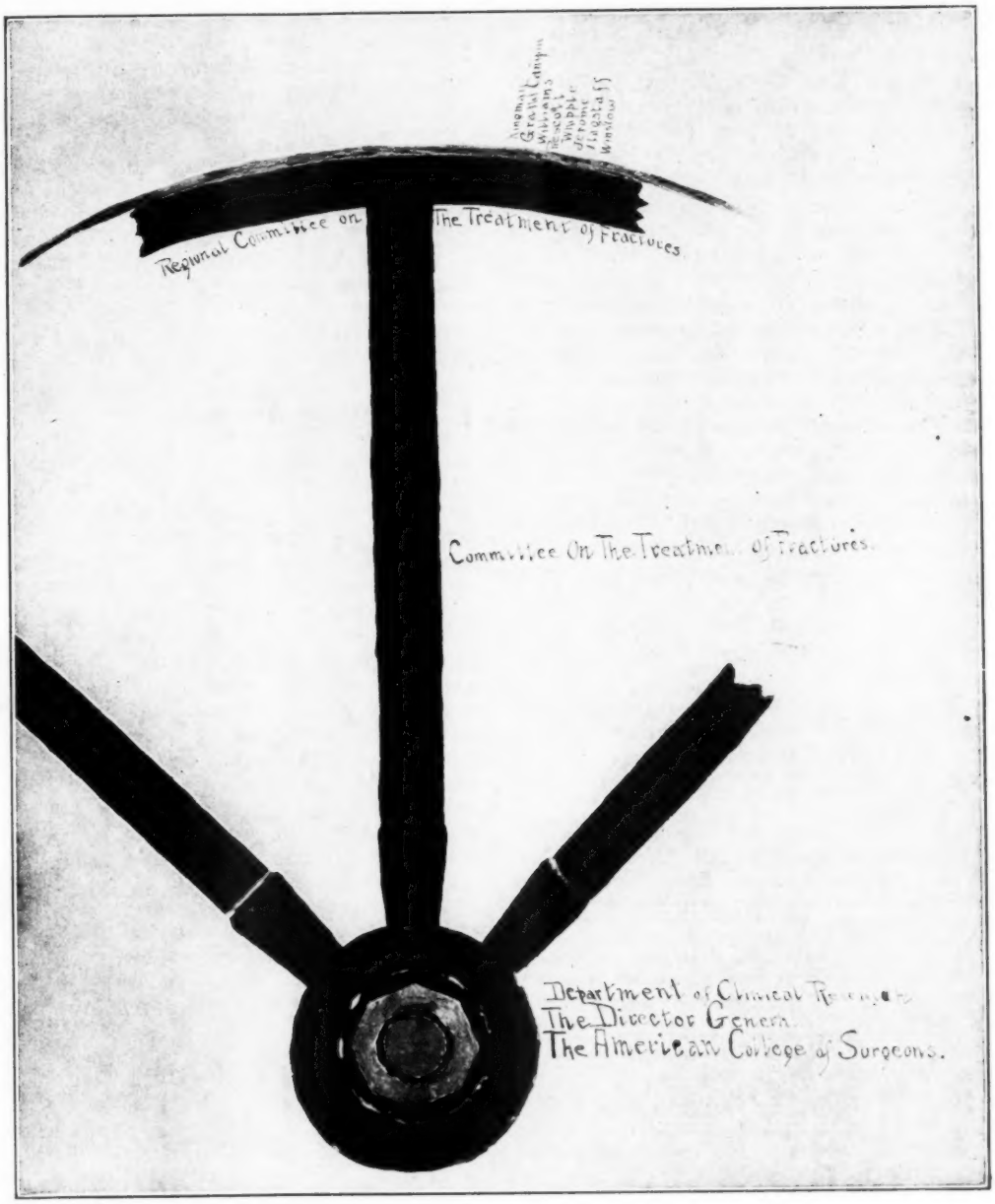
What is our position and function in this great wheel created by the American College of Surgeons? The parts of the old wagon wheel, as I recall them from my boyhood days on the farm, were the hub, spokes, fellies and iron tire. In hot weather the spokes became loosened from the hub, the fellies loose from each other and the spokes. The wheel rattled like a modern radio in a thunder storm, often throwing off the tire, with dire disaster to the fellies, spokes, and hub, yes, and to those riding in the wagon.

Again I ask, what is our position in this great wheel created by the American College of Surgeons? Certainly we are not the hub! That is the College itself. Visualizing our sub-committee as being farthest from the hub, we must be the tire that binds. If the wheel would function properly at all times, it must have its parts in perfect contact and its tire frequently reset to keep the wheel from rattling. This meeting today is for the purpose of setting the tire to the wheel as it applies to Northern Arizona. Before undertaking the smithy's job, let us pause for a moment and see how the wheel has been builded and made ready for the iron tire.

"The American College of Surgeons was organized at a meeting in Washington on Monday evening, May 5, 1913. Four hundred and fifty prominent surgeons of the continent of North America came together at the invitation of an Organization Committee which had been appointed by the Clinical Congress of Surgeons of North America at its meeting in November, 1912."

"The object of the College shall be to elevate the standard of surgery, to establish a standard of competency and of character for practitioners of surgery, to provide a method of granting fellowships in the organization, and to educate the public and the profession to understand that the practice of surgery calls for special training, and that the surgeon elected to fellowship in this college has had such training and is properly qualified to practice surgery."

Dr. J. M. T. Finney, the first president, stated in his presidential address in 1913: "The aim of this organization and the reason for its existence lie in its disinterested and unselfish efforts to elevate the standards of the profesion, moral as well as intellectual, to foster research, to educate the public up to the idea that there is a difference between the honest, conscientious, well-trained surgeon, and the purely commercial operator, the charlatan and the quack; furthermore, that the term 'surgeon' means something more than a suave manner, a glib tongue, a private hospital, a press agent, and the all too easily acquired diploma, with its accompanying title of 'Doctor.' The standardization of surgery is absolutely essential to guard the public against such as these, as well as to preserve the honor of the guild itself. So far as the public is concerned, it is necessary to protect it from the wolves in sheep's clothing, from those who would prostitute their high office for the purpose of gain, from the ignorant and untrained, from


Regional Committee on The Treatment of Fractures
Committee On The Treatment of Fractures
Department of Clinical Research
The Director General
The American College of Surgeons.

those who by reason of the lack of surgical judgment and skill are incompetent. The American College of Surgeons has been called into being as an active, vigorous, virile protest upon the part of the profession itself against this unhappy state of affairs."

So, back in 1913, the surgical branch of the medical profession of America ceased to attempt to elevate itself by its bootstraps and chose rather, by organization, "to educate the public and the profession that the practice of surgery calls for special training," and so forth.

Probably the greatest educational as well as humanitarian accomplishment of the College of Surgeons is hospital standardization. "The purpose of the Hospital Standardization movement is to promote efficient medical service in hospitals and in so doing must take into consideration the providing of suitable accommodation, adequate diagnostic and therapeutic facilities, competent personnel and efficient organization and procedures. The minimum requirements as laid down by the American College of Surgeons are based on the following eight fundamental principles pertaining to hospital organization and apply in common to all institutions caring for the sick and injured:

"1. A modern physical plant free from hazards inimical to the patient's welfare and safety, properly furnished and equipped for the comfort and scientific care of the patient.

"2. A carefully selected governing body representative of the best community interests, in whom is vested complete and supreme authority for the management of the institution.

"3. A competent chief executive officer or superintendent, with authority and responsibility to carry out the policies of the institution as approved and authorized by the governing body.

"4. An adequate and efficient personnel, competent in their respective fiellds, to carry out the details of management and administration under proper supervision, responsible to the chief executive officer of the institution.

"5. An organized medical staff of ethical, competent doctors, to determine, develop, control, and carry out the professional policies of the hospital, subject to the approval of the governing body.

"6. Adequate diagnostic and therapeutic facilities with efficient technical service, under competent medical supervision.

"7. Accurate and complete case records for all patients treated, cross indexed and filed in an accessible manner, so as to be available for future study, reference and clinical research.

"8. Group conferences of the administrative officers and medical staff to review regularly and thoroughly the activities of their respective divisions for the purpose of keeping the service and scientific work on the highest plane of efficiency."

The American College of Surgeons has other departments at work; that of clinical research among other things has delegated to it the work of the Committee on the Treatment of Fractures. This committee comrosed of twenty-seven of the outstanding fracture men in the United States, Canada and Porto Rico, under the chairmanship of Dr. Charles L. Scudder, constitutes in our simile the spokes of the great wheel.

"In 1922, under the guidance of Dr. Charles L. Scudder of Boston, the study of a standard for the treatment of long-bone fractures was initiated. It was recognized that the minimum standard for hospitals would have to be amplified from time to time by the addition of suggestions for a standard of efficiency in the specialties of surgery. Much valuable material in the treatment of fractures had been accumulated during the war. Standardized apparatus has been evolved, and material accumulated for a still further stabilization of this chaotic subject. Dr. Scudder has organized a committee that is already bringing about order, and the findings, which represent the consensus of opinion of men of experience, have been passed along to clinicians and hospitals for their consideration and adoption. This committee will continue its work and make its yearly report and recommendations through the College and its publications." (A.C. of S., 1925.)

"In 1926, letters were sent out to all of the 1947 hospitals of fifty or more beds, asking for the names of the physicians or surgeons caring for fractures and interested in fractures, in each of these hospitals. Replies have been received from upwards of 1050 hospitals. These replies have been indexed and card-catalogued.

"Your committee, therefore, has in its possession the addresses of individuals in each of the 1050 hospitals who are especially interested and willing to cooperate with the committee in further investigations and study. The committee thus knows the responsible men in each institution.

"A very important fact has been determined by this letter, namely: During tthe year 1924, in the 1050 hospitals questioned, 150,989 fractures were cared for. This is an enormous number and serves as the first

satisfactory summary of this information. Obviously, if the forms of treatment and the results of treatment were known in these (approximately) 151,000 cases, how tremendously valuable this information would be from an industrial standpoint. Such facts the committtee hopes to be able to assemble later." (A.C. of S., 1926.)

Early in 1929, Dr. Scudder visited our State (at Phoenix) as one of the principal speakers sent out by the College of Surgeons to conduct the sectional meteings of the year. Visualize for yourselves the conditions he found as related by these excerpts from his report. They are based on personal observation and contacts made on this extensive trip.

"I have been impressed by the great efficiency of the machinery of the College to function in an educational way, and I believe that the results as regards the general uplift of the profession will endure.

"At each place, in presenting the subject of the treatment of fractures, I attempted to become familiar with local conditions through answers given to the following questionnaire:

Who is taking care of fractures?

Who is doing the industrial accident work?

Who is interested in fractures, in the various hospitals of the city?

Is the workmen's compensation act well administered?

Are there malpractice suits because of poorly treated fractures?

What is the special type of fracture seen in this community?

Is any one doing research on fractures?

Is the orthopedic surgeon interested in fractures?

What kind of work is he doing?

Are there established fracture services in hospitals?

Is there a well-equipped splint room in the hospital?

Does the teaching center have any effect on service rendered the fracture patient?

What is the effect of the open hospital on fracture treatment?

Do standards of results vary?

What is the status of the operative treatment?

Are general practitioners interested in fracture treatment?

Are general surgeons interested?

The answers to these questions put me in touch with the fracture situation in each locality. The questions were not always answered completely, but their presentation led to discussion and to the gleaning of information.

"Interest in the treatment of fractures is growing through this western country. The general surgeon is interested only exceptionally. Very few surgeons are competent to handle all fractures and all their complications. The man practicing orthopedics is interested outstandingly in fracture treatment. A great deal of experimental work is being done. Technic is being used which is not methodical and is without sound foundation—methods which have been found inadequate and unsatisfactory in other localities. Insufficient traction methods are being employed. Operative replacements are too generally resorted to. The indications for the use of the operative treatment are not clearly defined.

"The surgeons are well informed concerning pathological processes and are well versed in the indications for the surgical treatment of such lesions. There is no general body of knowledge of the fundamentals of fracture treatment. The anatomical result of the attempted reposition of a fracture serves often as the only basis for treatment. In certain sections the desire to secure an exact anatomical result, as indicated by the x-ray, is the basis for an early operative replacement. This attitude is urged because, should there be a trial in court, the decision of the court is based largely on the exactness of the reduction, rather than on the amount of function.

"The centers which have teaching hospitals and a moderately closed or controlled hospital staff are, as a rule, doing the best work. A wide open hospital is not conducive to sound work in surgery, particularly in fracture surgery.

"As to the present methods of treating fractures, it may be said that information regarding fracture treatment is noticeably lacking in uniformity. The generally accepted bases for treatment are not always recognized. As a result, experimental forms of treatment are duplicated, to the detriment of both patient and physician.

"In certain fractures of the long bones, it is pretty commonly understood that skin traction, with a small weight gradually increased, will not be effective. Despite this fact, I found this inadequate and obsolete form of treatment many times in use. Obviously dissemination of information on this point through the local regional committees recently formed, will do away with this inefficient procedure and be the means of substituting therefor a better method. One of the important contributions of the frac-

ture committee to progress is the dissemination of knowledge of achievements along all lines of treatment. A very important reason for establishing regional committees is to have available men in the different sections of the country to whom we may send our findings.

"During this trip some twenty regional committees were appointed. (There are now, January, 1931, twenty-four regional groups.) These small groups of men selected from those interested in fracture work will be the means of (1) maintaining local fracture interest; (2) conducting fracture clinics and meetings; (3) organizing teaching demonstrations; (4) keeping in touch with the general fracture committee; (5) receiving and locally broadcasting bulletins issued from time to time by the general committee; and (6) cooperating wtih future visiting delegations from the general fracture committee.

"In conclusion, it may be stated that my visit through the western states served definitely to secure a knowledge of fracture treatment by bringing into view present practice; by informing the profession of the work of the College through its fracture committee to improve treatment; by assembling interested individuals who may develop a mutual understanding of needs; by establishing groups to concern themselves with progress and the output of the Committee contacts; by stimulating interest in fractures directly by personal appeal; by sympathetic personal approval or criticism of work in progress; by assistance in establishing fracture services in the larger hospitals according to local conditions.

"Such contacts as are made by attendance on these clinical meetings, if repeated with regularity, will serve in a large measure gradually to improve fracture treatment." (A.C.S. Bull. Sept., 1929.)

It is obvious that the United States is less than half organized, but we may take just pride in the fact that Arizona, the baby state, has the honor to be included as one of the regional organizations, due very largely to the recognized ability of our chairman, Dr. E. Payne Palmer. His committee represents a "felly" in this great wheel, or "the Regional Fracture Committees of the College are the organized living contacts of the College with the great body of the medical profession."

May I digress for just one moment to note that Arizona is still further honored by the American College of Surgeons by having on its Committee on Traumatic Surgery our esteemed and able colleague, Dr. John E. Bacon, of Miami.

Finally, following our simile to our subcommittee, we reach the tire. You have already visualized it as a very small segment of the iron tire that binds. Without the other parts of the wheel we are but a hoop with which children may play, or a bit of scrap iron. When set to the fellies, what strength! What perfect functioning of a mighty wheel!

Small and seemingly insignificant is our section of the rim, very remote from the "hub," now deep in the mire, now ploughing through the desert dust, now shedding out iron molecules in scintillating energy as we strike the rocks of the roadway, yet, withal, happy that we may have even a small part in this mighty wheel of surgical progress.

If I have drawn my simile with due regard to historic facts and proper evaluations of existing data, it would seem that our duties as sub-committeemen on the "tire," and so very remote from the "hub," may be briefly outlined as follows:

(1) To serve as surgical outposts in fracture treatment;

(2) To evince at all times a progressive attitude in fracture treatment;

(3) To maintain at all times within our sphere of activity an adequate and serviceable minimum equipment for the emergency and definitive treatment of fractures;

(4) To consider fractures as emergencies and the initial treatment as the most important, admitting always that "difficult" fractures require the care of experienced surgeons;"

(5) To discard obsolete technic and employ the generally accepted methods, such as are outlined in the Bulletin of the American College of Surgeons, "The Principles and Outline of Fracture Treatment," and to encourage our confreres to do likewise;

(6) To recognize the importance of x-ray diagnoses of fractures but not their infallibility;

(7) To use the standard fracture record sheet authorized by the College and to secure a better follow-up;

(8) Realizing that a large proportion of the medical profession is ignorant of the poor results of present fracture treatment and uninterested in making them better, it is our duty to stimulate the interest that is lacking and improve the hospital and private standards of treatment.

Finally, to epitomize, I quote from the minutes of the General Fracture Committee of the American College of Surgeons held in New York, January 23 and 24, 1931: "At present the General Fracture Committee of the College has numerous sub-committees in the various states and provinces, whose

function is to furnish the central committee with information concerning the status of the treatment of fractures in their respective communities, to stimulate interest in the subject, and to put into effect the general and specific recommendations of the General Committee as regards the standards for fracture equipment in hospitals, supervision of treatment, and other standards set up by the General Fracture Committee."

(The other papers read at this conference will be published this month, as a symposium.)

REPORT OF MEETING OF NORTHERN ARIZONA SUB-COMMITTEE OF THE COMMITTEE ON FRACTURES OF THE NORTHERN AMERICAN COLLEGE OF SURGEONS

Prescott, July 11, 1931.

Our committee held its first meeting at 4 p. m., July 11, 1931, at the Mercy Hospital, Prescott, Arizona.

There were present, Dr. E. Payne Palmer, of Phoenix, Chairman of the Arizona Regional Committee; Dr. H. T. Southworth, representing the Mercy Hospital, Prescott; Dr. R. N. Looney, the Yavapai County Hospittl, Prescott; Dr. Jacob Shearer, U.S. Veterans' Hospital, Whipple; Dr. A. C. Carlson, The United Verde Hospital, Jerome; Dr. Rembert H. Thigpen, The United Verde Extension Mining Co., Jerome; Dr. Charles W. Sechrist, Mercy Hospital, Flagstaff, and the chairman. Dr. B. G. Carson, Grand Canyon Hospital, was unable to attend, Dr. Paul A. Melick, of the Williams Hospital, telephoned that he was detained at the last minute by an emergency case; Dr. Toler R. White, of the Kingman Hospital, wrote that he would be unable to attend because of obstetric engagements; Dr. Oscar S. Brown, Santa Fe Surgeon at Winslow, could not be present.

The program was as follows:

At Mercy Hospital:

1. The Purpose, Plans and Objectives of the Committee on the Treatment of Fractures of the American College of Surgeons,—C. E. Yount, Prescott.
2. The Minimum Equipment of General Hospitals for the Transportation and Emergency Treatment of Fractures,—Exhibition and Demonstrations,—H. T. Southworth and R. N. Looney, Prescott.

At Quarters 6, Whipple Barracks:

3. Open Operations in the Treatment of Fractures, Selection of Cases, Types and Methods, Illustrated, X-ray and Material,—A. C. Carlson, Chief Surgeon, United Verde Copper Co., Jerome.
4. Faulty Union and Non-union of Fractures,—Jacob Shearer, Surgeon, U.S. Veterans' Hospital, Whipple.

6:30 p. m. Dinner at Hassayampa Hotel as Guests of the Sub-Committee Chairman.

Round Table Discussion Led by E. Payne Palmer, Chairman of the Arizona Regional Committee, Phoenix.

Dr. Yount's paper, being introductory, was of necessity largely historic, leading up to the plans and objectives as far as they could be visualized from the reports in the Bulletins.

Dr. R. N. Looney opened the discussion on "The Minimum Equipment of General Hospitals for the Transportation and Emergency Treatment of Fractures—Exhibitions and Demonstrations," with a description of an emergency bag which they have found very helpful in answering fracture and other emergency calls. It is the duty of the office nurse to see that this bag is always equipped for service.

Dr. Southworth discussed "The Emergency Treatment of Fractures," with special reference to teaching all first-aiders to "splint them where they lie." They had two modern motor-driven ambulances at the hospital for our inspection. The advantages offered, when compared with extemporized transportation, were apparent to all. We were then taken to one of the hospital rooms where all the articles in the Minimum Equipment, including portable x-ray and Balkan frame, were displayed for our information. This completed the program at Mercy Hospital.

At Quarters No. 6, Whipple Barracks, Dr. A. C. Carlson gave us a very excellent paper on "Open Operations in the Treatment of Fractures,—Selection of Cases, Types, and Methods." This paper was profusely illustrated by x-ray pictures showing many of the long-bone fractures before and after operation and followup; also one compression fracture of dorsal vertebra. Dr. Carlson was very frank in his discussion of the pathology in each case, demonstrated by x-ray the failure of the closed methods which led to the open operation in each case. Having had the advantage of the Massachusetts General Hospital intensive fracture course in 1929, and a wide industrial experience, Dr. Carlson's discussion proved most instructive. (Four of the doctors present had taken this course.)

Dr. Jacob Shearer closed the afternoon meeting with his paper on "Faulty Union and Non-Union of Fractures." This was illustrated by x-ray films and represented the doctor's views based on many years of fracture work. He was willing to accept Whitman's views on the operative treatment of fresh fractures.

At 6:30 p. m. we adjourned to the Hassayampa Hotel for dinner, with the Sub-Committee Chairman as host. Dr. E. Payne Palmer, Regional Committee Chairman, conducted the round table discussions. After outlining the work of the General Fracture Committee, he called upon each one in turn to give some expression of opinion on the fracture situation as he contacted it.

Dr. Gail D. Allee, Medical Officer in Charge at Whipple, reported that there was only a relatively small percentage of his personnel who had suffered from fractures incident to their occupations, that most of the cases among the employees were the result of automobile accident. The ex-service men, by reason of recent law, are coming to the hospital in increasing numbers for the treatment of fractures, emergency and corrective. Mr. Harry Southworth, son of Dr. H. T. Southworth, and a senior medical student at Rush, gave us first-hand information from Dr. Kellogg Speed's clinic, discussing nerve injuries in fracture of foream. Dr. William G. Carhart, pathologist at Whipple, discussed for us the Ewing type of bone sarcoma. Dr. R. N. Looney gave us an interesting account of the treatment of fractures as industrial casualties before the days of the x-ray, and cited the good functional results usually obtained and the relative infrequency of damage suits in those pioneer days in Arizona. Dr. H. T. Southworth discussed the value of early extension in fractures, and the more prevalent use of the Thomas splint and its various modifications.

Dr. Jacob Shearer presented cases with x-ray:

1. Old fracture into knee-joint, "broncho busting" accident; patient unable to give any accurate

(Continued on page 393)

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CORRECTION

In the article by Dr. Louis H. Fales, last month, on page 318, paragraph one, the word "unusual" should be "usual," making the sentence read as follows: "Bruns, after several years of research, has come to the conclusion that the most **usual** type of rale heard in pulmonary tuberculosis," and so forth.

BOOK REVIEWS

NEW AND NONOFFICIAL REMEDIES, 1931, containing descriptions of the articles standing accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1931. Cloth. Price, postpaid, $1.50. Pp. 481+LVI. Chicago. American Medical Association, 1931.

This volume is the annual publication of the Council on Pharmacy and Chemistry of the American Medical Association giving the latest authentic information concerning those of the newer medicinal preparations found worthy of the consideration and use of the medical profession. Each year the Council scans the general articles under which the various preparations are classified and revises these to conform to the latest and best medical thought.

A glance at the preface shows that a number of preparations have been omitted because they conflict with the rules that govern acceptance, because their distributors did not present evidence to demonstrate their continued acceptability, or simply because the manufacturers have taken them off the market. Important revisions have been made in a number of the general articles and in the descriptions of various preparations. Among the new preparations that have been found by the Council during the past year to be eligible for admission to the book are Amytal and Pulvules Sodium Amytal, 3 grains, barbituric acid derivatives for use preliminary to surgical anesthesia; Thio-Bismol, quinine bismuth iodide, sodium potassium bismuthyl tartrate, and Tartro-Quiniobine, bismuth compounds for use in the treatment of syphilis; Scillaren and Scillaren-B, preparations contaniing the squill glucosides; two new cod liver oil concentrates: Synephrine, a new vasoconstrictor, and synthetic thyroxine.

NEW AND NONOFFICIAL REMEDIES should be in the hands of all who prescribe drugs. The book contains information about the newer materia medica which cannot be found in any other publication.

ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1930. Cloth. Price, $1.00. Pp. 91. Chicago: American Medical Association, 1931.

This book is essentially a record of the negative actions of that distinguished body, the Council on Pharmacy and Chemistry of the American Medical Association; that is, it sets forth the findings concerning medicinal preparations which the Council has voted to be unacceptable for recognition and use by the medical profession. Many of the reports record outright rejection or the rescinding of previous acceptances; others report in a preliminary way on products which appear to have promise but are not yet sufficiently tested or controlled to be ready for general use by the profession.

Among the reports recording outright rejection are those on: Avesan (H), formerly Nuforal, a mixture stated to be composed of formic acid, sodium nucleinate, camphor, allyl sulphide and chlorophyll, with traces of salicin and sulphuric ether, marketed with unwarranted claims of usefulness in the treatment of tuberculosis, asthma, and other respiratory diseases; Ceanothyn, once before rejected and still found to be marketed with unsupported therapeutic claims; Collosol calcium and Collosol Kaolin, so-called colloidal preparations, the former an unscientific mixture of unproved value, the latter a possibly dangerous preparation, and both marketed with unwarranted claims; Ephedrol with Ethylmorphine Hydrochloride, an unscientific epehedrine preparation marketed under an unacceptable proprietary name with unwarranted therapeutic claims; Farastan, an unscientific iodine-cinchophen preparation proposed for routine use in "arthritis . . . and Rheumatoid conditions"; Haley's M-O Magnesia-Oil, a magnesia magma and liquid petrolatum mixture in fixed proportions marketed with emphasis on the"M-O"; Lydin, a testicular extract, marketed with claims of value in the treatment of impotence; and Metatone, a shot-gun "tonic" mixture marketed under a proprietary name with unwarranted therapeutic claims.

FOOD ALLERGY, ITS MANIFESTATIONS, DIAGNOSIS AND TREATMENT, WITH A GENERAL DISCUSSION OF BRONCHIAL ASTHMA. By Albert H. Rowe, M.S., M.D., Lecturer in Medicine in the University of California Medical School, San Francisco, Calif.; Chief of the Clinic of Allergic Diseases of the Alameda County Health Center, Oakland, Calif.; Consultant in Allergic and Metabolic Diseases, Highland Hospital; President of the Association for the Study of Allergy, 1927-

1928. Pp 442. Lea & Febiger, Philadelphia, 1931.

This volume deals primarily with the problems of food allergy, but emphasizes also the importance of inhalant and other forms. There is also a very complete discussion of bronchial asthma, dealing especially with etiology and treatment. The author shows the necessity of devoting time and thought to the mastery of the detail required for diagnosis and treatment. The value of skin tests is emphasized, as well as the fallacy of depending entirely on skin reactions in the face of suggestive history. Great stress is placed upon the use of the author's "elimination diets" in diagnosis and treatment and he considers diet trial of greater value than testing in arriving at a diagnosis. Methods of other writers are discussed, such as "the food addition method" of Orville H. Brown (Phoenix), the method of "diet trial" of Eyerman and others. Many pages are devoted to suggested diets and such problems as milk-free diet for infants, and wheat, milk and egg free diets are discussed. A prominent place is given to bronchial asthma dealing with etiology and diagnosis by means of skin tests and elimination diets and treatment by environmental control, diet and drugs.

This volume will prove a valuable additioin to the equipment not only of those specializing in allergic diseases, but also of the internist who daily meets with the problems here discussed.

H. P. MILLS.

THE BEGINNINGS—EGYPT AND ASSYRIA, by Warren R. Dawson, F.R.S.E., Fellow of the Royal Society of Medicine, of the Society of Antiquaries of Scotland, and of the Royal Anthropological Institute of Great Britain and Ireland. Paul B. Hoeber, Inc., New York.

Physicians generally are interested in the history of the art and science of medicine. They are busy men, however, and find it impossible to take the average book on Medical History and get a great deal out of it. The Clio Medica series is designed to supply a desire of busy medical men to get a sound foundation in medical history. Clio was the goddess of the muse of history and Clio Medica would be a goddess of a muse of medical history. The plan is that there shall be a series of the small volumes pocket size with the number of pages that can easily be read at one sitting.

The volume—Egypt and Assyria depicts the cradle and earliest stage of medicine. The fact that superstition and mysticism governed all thought concerning disease and its cure made such ministrations to the sick no less a part of medicine. The desire to live forever led to mummifying of the dead (a religious and not a medical procedure) and this procedure has profoundly influenced the development of scientific medicine. It was the embalmers who first acquired knowledge of the intimate structure of the human body. This volume deals with such topics as: Primitive ideas of disease and death: averting death and prolonging life; the magician; the medical books: ancient Egyptian and Assyrian medicine, drugs, doses, and so forth, and the legacy of the past. The text is most readable. Any physician will be greatly edified by its perusal.

ANATOMY, by George W. Corner, M. D., Professor of Anatomy in the University of Rochester. Paul B. Hoeber, Inc., New York.

This volume is another of the Clio Medica series. It deals with the development of anatomical knowledge. The oldest records of medical lore are the Edwin Smith and Ebers papyri. These are compilations from older works long lost. The first dissections of record were on animals in the sixth century, B. C. by Alcmaeon of Craton. Herophilus, Erasistratus, Galen and a few others advanced the knowledge of human anatomy, and preserved it through the dark ages, during which time science was at a standstill. In the middle ages Constantine and Avicenna translated the works of Galen, Aristotle and others and laid the foundation for modern anatomy development.

Raimondo de'Luzzi early in the fourth century taught from the cadaver. Berengario early in the 16th century was the first modern anatomical investigator. His two books were the first to contain systematically arranged illustrations of the skeleton, muscles, blood vessels and the female reproductive organs. The invention of printing and wood cuts advanced the study of anatomy more, however, by dissemination of the ancient knowledge than by new investigation. Vesalius and Ambroise Pare are directly responsible for the rapid advancement of modern anatomical researches. The Italian artists found it necessary to do dissections the better to panit the human form and by their illustrations contributed to an understanding of anatomy. Throughout the modern age there are numerous names justly famous as anatomical investigators. This small volume of 80 pages gives a splendid resume of the history of the development of anatomical knowledge.

O. H. BROWN.

SPONDYLOLISTHESIS, WITH SPECIAL REFERENCE TO THE INDUSTRIAL CASE. J. Edgar Stewart, M.D., St. Louis, Mo. Sou. Med. Jour., 24:317, (April, 1931.)

The author describes the pathological anatomy, incidence and clinical picture of this condition. The conclusive evidence is in the radiological examination, and without radiograms the existence of the displacement can only be guessed at. Any patient complaining of a low back disability or who has sustained an injury to the back should have roentgenograms in two planes, this being just as important in this region as they are about the extremity joints. The importance of x-ray examination at a later date, when the examination following the injury was negative, is very strikingly shown by cases cited. The fifth lumbar vertebra will frequently be shown to have slipped forward some days or weeks following an injury, when nothing was visible on films made at the time.

ARIZONA STATE BOARD OF MEDICAL EXAMINERS

At the April, 1931 meeting of this Board, the following applicants were registered by examination:

DR. MENNO SIMON GAEDE, a graduate of the University of Kansas Medical School, 1928. Dr. Gaede has joined the staff of the United Verde Hospital at Jerome.

DR. CHARLES S. BOONE, a graduate of the University of Arkansas School of Medicine, May, 1929. Dr. Boone is to be located at Miami, Ariz.

The following applicants were licensed to practice in Arizona, by reciprocity.

DR. IRVING E. KAUFMAN of Phoenix, graduate of Rush Medical College (1922), formerly located in Chicago. By reciprocity with Illinois.

DR. HAMER C. IRWIN, graduate of Johns Hopkins (1905), now located at Pocatello, Idaho. By reciprocity with Idaho.

DR. ELMER F. GARLINGTON, graduate of University of Louisville (1913), now located at Royal Oak, Mich. By reciprocity with Kentucky.

B. M. BERGER, Secretary.

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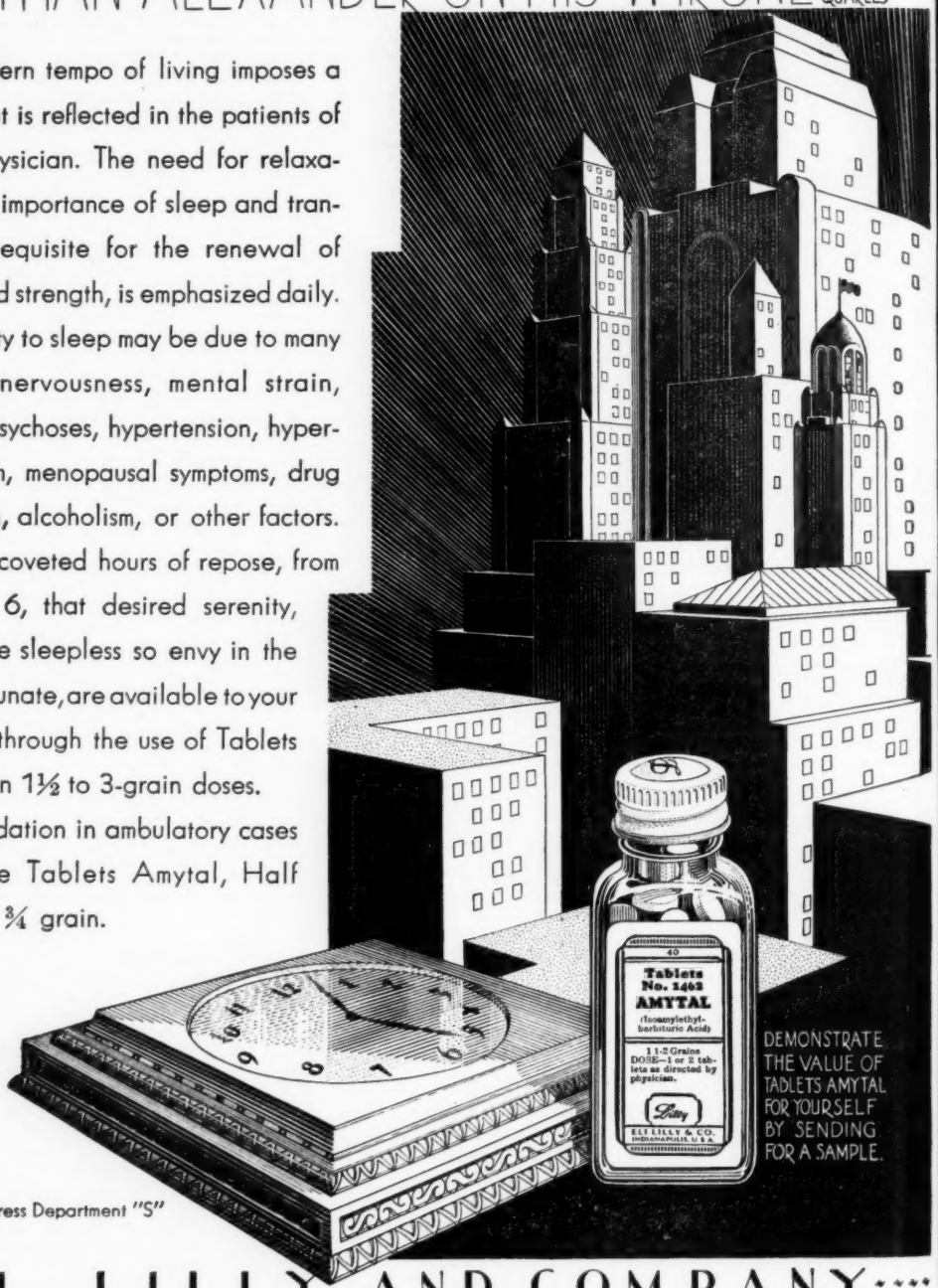

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American Congress of Physical Therapy
October 5, 6, 7, 8, 1931.
Hotel Fontenelle, Omaha, Nebraska.

The tenth anniversary session of the American Congress of Physical Therapy will be held October 5, 6, 7, 8, 1931, at the Hotel Fontenellle, Omaha, Nebraska. The Congress has always endeavored to present a program of high quality, and while each year has seen a steady improvement, this year's program is of such a standard that it will be difficult to surpass in the future. Appreciating the desirability of clinics and clinical demonstrations, the program committee has set aside the mornings for these purposes. It will be the first time that the society will have available ample clinical material for medical and surgical services. The cooperation of the University of Nebraska, College of Medicine, and the Creighton University School of Medicine has made this possible. In the section on Eye, Ear, Nose and Throat, tonsil clinics will be conducted daily during the first three days of the meeting. Electrosurgery for tonsils has found a definite place in the armamentarium of many surgeons. Prominent specialists will demonstrate the various methods and technics now being employed.

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As mentioned before, we have felt that rate reductions were advisable, and this has been done within the last few months.

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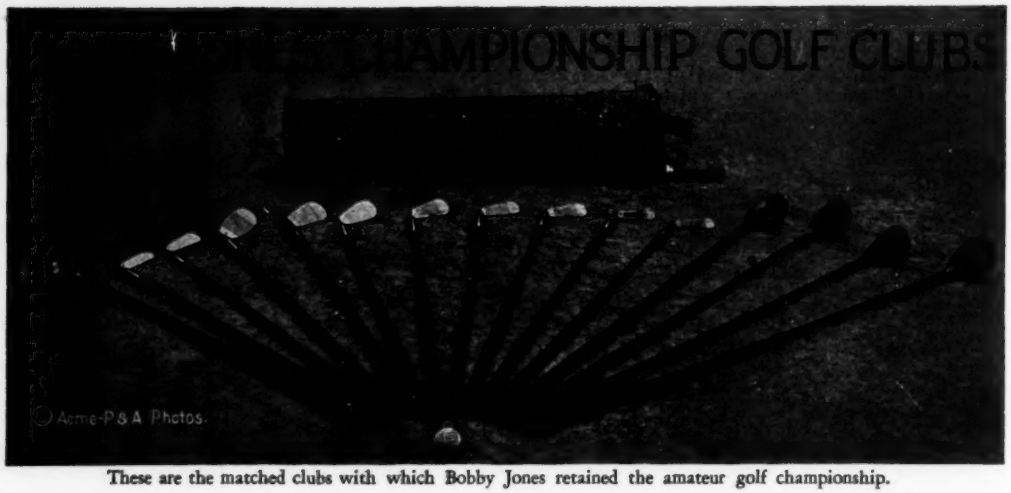

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REPORT OF MEETING OF NORTHERN ARIZONA SUB-COMMITTEE

(Continued from page 387)

information as to original diagnosis or pathology; after five years there were multiple chondromata (Wassermann negative), some loose, others growing from articular surfaces of injured femur and tibia, producing a deformity greatly interfering with normal function.

2. X-ray of fracture at upper and middle third of femur with moderate amount of callus and marked bowing, six-screw Lane plate in situ; only four screws had been used and these were the center four. It was debated whether the bowing was due to inadequate support from the Lane plate, too early use of the leg, or both. Certain it was that a walking caliper splint would have prevented the deformity.

Dr. R. H. Thigpen discussed infection in compound fractures. The likelihood of particles of clothing and other infective material being carried deep into the wound in gunshot and explosive mine fractures was stressed. Complete sterilization is indispensible to early union in these fractures.

Dr. Charles W. Sechrist discussed the probable source of infection in a case of multiple gunshot wounds of pelvis and femur, comminuted fracture in upper third of femur, suppuration, osteomyelitis, and satisfactory union after eleven months' treatment. A loop of the ileum had been perforated in this case.

Dr. C. E. Yount called attention to some of the work of the General Fracture Committee:

(1) The proposed manufacture of standard bone plates and screws of the Sherman type, having the stamp of the American College of Surgeons;

(2) The broad field of cooperation in first aid in fractures being opened up through the establishment of Red Cross first-aid stations. It was suggested by Dr. Yount, and agreed to by the sub-committeemen present, that, should the Central Fracture Committee and the Red Cross so desire, we would offer the following propositions:

(a) That certain automobile filling stations within the jurisdiction of each sub-committeeman be designated as first-aid station for the American Red Cross;

(b) That the sub-committeeman be responsible for the training of his first-aiders at these stations, as provided in Red Cross Regulations;

(c) That special effort be made to secure from the Red Cross adequate fracture equipment for these designated first-aid stations.

If this method were put into practice by all sub-committees it would not be many years before the network of first-aid stations operating under the General Fracture Committee of the American College of Surgeons and the Red Cross would cover the whole United States. I can conceive of nothing which would react for greater good in automobile fracture cases and insure better emergency and after treatment in those fractures.

Dr. Yount then thanked Dr. Palmer, his other guests and his committee for the hearty cooperation in making this organization meeting a very successful one. Adjournment was then taken.

(Signed) C. E. YOUNT,
Chairman Northern Arizona Sub-Committee
on Treatment of Fractures.

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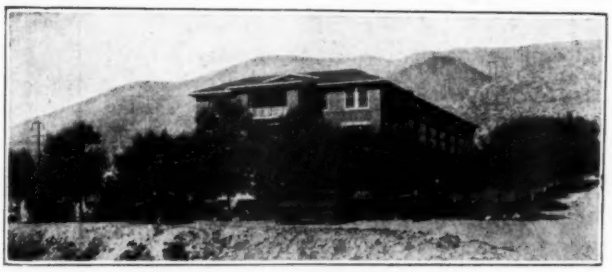

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